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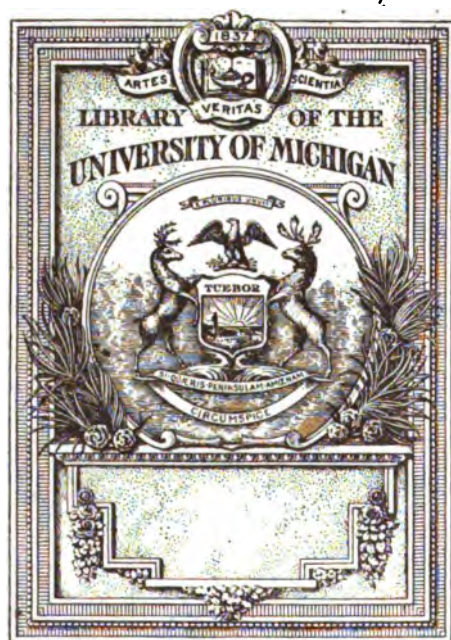
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AGRICULTURAL ECONOMICS

BY

HENRY C. TAYLOR, 1873-

CHIEF OF THE OFFICE OF FARM MANAGEMENT

U. S. DEPARTMENT OF AGRICULTURE

ONE TIME PROFESSOR OF AGRICULTURAL ECONOMICS

IN THE UNIVERSITY OF WISCONSIN

New York

THE MACMILLAN COMPANY

1919

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Set up and electrotyped. Published November, 1919.

Northwood Press
J. S. Cushing Co. — Berwick & Smith Co.
Norwood, Mass., U.S.A.

© Mar. 10, 1920 C.M.

To

RICHARD T. ELY

A STUDENT WITH AN EVER YOUTHFUL AND OPEN
MIND AND A TEACHER WHO GIVES AN
INSPIRATION THAT LASTS

347648



PREFACE

THIS book is intended for the student and the farmer interested in the study of those economic principles which underlie the effective organization of the farm, and for the statesman interested in establishing laws and institutions for the development of agriculture. The subjects treated correspond to those studies grouped under the head of Farm Management in some colleges and under the head of Agricultural Economics in others. From the author's point of view these two terms as used at the present time cover essentially the same subject matter so far as they relate to the economics of production on the individual farm, but he believes that the latter term is much the broader, including also the problems of marketing, land economics, farm finance, and farm life.

The matter here presented is the result of a gradual development of twenty years of study in this field. Its publication marks the close of seventeen years of teaching of agricultural economics by the author in the University of Wisconsin, where he first gave a course to the short-course students in the winter of 1902-1903, at which time a "Syllabus of Lectures on Agricultural Economics" was printed for the use of his class. In 1905 "An Introduction to the Study of Agricultural Economics," containing thirteen chapters, was published, the main points of which have been included in the present volume. For many years, parts of the present volume have been mimeographed and used in the classroom.

While the author has been working in this field for twenty years he recognizes that the pioneer stage is only now passing and that the next few years will result in great progress both in research and education in agricultural economics. The present treatise is looked upon as being by no means a final statement on the subject, but the author's change of position

and the demand on the part of many of his former students for the materials which have been accumulated in his experience as a teacher make it seem advisable to publish this volume in its present form with the expectation that in a few years the rapid development of the subject will make it possible to make a much more adequate statement of the subject than is here presented.

The author wishes especially to thank Professors Richard T. Ely, T. N. Carver, W. J. Spillman, and G. F. Warren, who have been of great help to him from time to time, in conferences and through correspondence, in clearing up many of the difficult problems in this field. He has also received help from time to time from the succession of students who have been in his classes. In leaving the classroom to enter upon activities in the Government Service the author will miss the stimulus which he has received from year to year through contact with students. He is hoping that students who have occasion to use this book will feel free to write to him in regard to any of the subjects discussed in order that he may in some degree continue to keep in touch with student thought on this subject.

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AGRICULTURAL ECONOMICS

AGRICULTURAL ECONOMICS

CHAPTER I

AGRICULTURAL ECONOMICS DEFINED AND DESCRIBED

THE subject matter of Economics is found in the relations arising among men in their efforts to satisfy their wants for food, clothing, shelter, and the many conveniences and luxuries of life.

Such a relation arises when one man has wheat to sell and another wishes to buy wheat. Here the problem is that of agreeing upon the price at which the wheat is to be transferred. Other economic relations arise when the use of land is to be secured either by lease or by purchase, when equipments are to be purchased, and when labor is to be employed. In all these cases the relation centers upon the question of price fixing, *i.e.* the agreement upon a rental for land, a price for equipment, and a wage for labor. These relations which focus upon price determine in a large measure the character of the work which men will do, what they will produce, and the methods they will use in producing them. Thus it is, that choice of a farm, choice of live stock and machinery, the choice of crops, the size of farms, the grouping of farm enterprises, the intensity of culture, and hundreds of smaller matters which arise from day to day have to be settled in terms of the prices of things used in production, that is, the cost, and the prices which can be secured for the different articles which may be produced. The farm manager, in deciding upon what to do and what not to do to secure a maximum profit, bases his choices upon relative costs and relative prices.

There are those who look upon economic problems not as problems of production, but problems of distribution, that is, the problem of sharing the food, clothing, and shelter among

those who want it. Economics has to do with production as well as with distribution. If all human wants could be satisfied without any effort, there would be no economic problem, neither of production nor of distribution. But while she has provided abundant opportunities for producing the means of satisfying human wants, Nature has decreed that man must work, — “In the sweat of thy face shalt thou eat bread.” Or to give Virgil’s version of the same law,

The sire of all, great Jove himself decreed
No work save those that task us should succeed.

Since it is by work that the wants of men are satisfied, it is of general interest that this work shall be so directed as to yield the largest possible returns in human satisfaction. Viewed from this standpoint it may be said that economics is first of all a treatment of the economy of energy required for the satisfaction of human needs. It is desirable that the energy required for the satisfaction of human wants be used most economically, not that men may work less strenuously, but that they may live more abundantly.

Farming is often spoken of as the most independent of all occupation, and it is true that the farmer is less dependent upon his fellow men than is his city brother. But while the farmer is brought into vital contact with other men less frequently than is the merchant or the manufacturer, yet, on the other hand, he is brought into much more vital contact with Nature. The manufacturer, for example, may know each evening what tasks are to engage his attention the next day, but the farmer simply knows what he would like to do, and awaits the dictations of the weather. Socially considered, the farmer may be more independent than the man of the city, but he is certainly more directly dependent upon the conditions set by his physical environment. Much that is characteristic of farm economics as a field of special inquiry grows out of this dependence upon Nature. This is shown especially in the influence of the seasons and the laws of plant growth upon the variety of work which the farmer performs.

But while the farmer may be more directly dependent upon Nature than are those engaged in the industries of the city, he is by no means independent of his fellow men. The pioneer farmer, who looked primarily to the satisfaction of the wants of his own household, may have selected the crops which he cultivated, without giving any thought to the needs of other men; but the modern farmer, who produces primarily for the market, and procures upon the market a large share of the necessities, conveniences, and luxuries of life, is bound to take into account the demands of his fellow men. The modern farmer must consider the price for which the produce can be sold as well as the costs of production, if he would manage his farm successfully.

This close dependence of the farmer upon physical and social conditions which are subject to variation from year to year makes it unprofitable for him to manage his work by rule of thumb. He must follow general principles rather than specific rules. He is always being required to adjust himself to new commercial conditions. Demands are being made upon his judgment many times in the course of each day's work, as he tries to adjust his farm operations to the varying conditions of soil and climate, ever holding in mind the demands of his market and the cost of each of the agencies of production, namely, land, labor, and equipment. It is necessary that the farmer be ever alert. "It is a maxim universally agreed upon in agriculture," says Pliny, "that nothing must be done too late; and again, that everything must be done at its proper season; while there is a third precept, which reminds us that opportunities lost can never be regained." It is, therefore, of exceedingly great importance that the farmer have in mind some guiding principles which, like the compass, will enable him to direct his actions in accordance with a definite purpose.

There remains until this day that class who fail to recognize the presence of natural laws, and who attribute the unusual success of the men of extraordinary ability to dishonesty or to foul play of some sort, while to "bad luck" they ascribe the results of their own lack of foresight, lack of judgment, or lack

of industry. These men who talk of "luck" and who are not willing to attribute to brain and brawn the success of their neighbors, may well draw a lesson from the following story, related by Pliny, the ancient writer already quoted:

"C. Furius Chresimus, a freedman, having found himself able, from a very small piece of land, to raise far more abundant harvests than his neighbors could from the largest farms, became the object of very considerable jealousy among them, and was accordingly accused of enticing away the crops of others by the practice of sorcery. Upon this, a day was named for his trial. Apprehensive of being condemned, when the question came to be put to the vote among the tribes, he had all his implements of husbandry brought into the Forum together with his farm servants, robust, well-conditioned, and well-clad people. The iron tools were of first-rate quality, the mattocks were stout and strong, the plowshares ponderous and substantial, and the oxen sleek and in prime condition. When all this had been done, 'Here, Roman citizens,' said he, 'are my implements of magic; but it is impossible for me to exhibit to your view, or to bring into this Forum, those midnight toils of mine, those early watchings, those sweats, and those fatigues.' Upon this, by the unanimous voice of the people, he was immediately acquitted."

It is highly desirable to emphasize the importance of strenuous mental and physical effort in winning success in farming. The element of uncertainty should not be underrated, for this is one of the characteristics of farming; but it should be remembered that as a rule the chance element is more or less equal in a given community, and at a given time, for all those who are competing for high rank as farmers. The big differences are due to differences in the farmers themselves, in their alertness and in the quality of their muscles and their minds. The more rational farmers are usually willing to admit that the unusual degree of success attained by one of their number is the result of hard work, clear thinking, and skillful management. These more intelligent farmers are coming to recognize that there are fundamental economic principles which, when carefully followed,

lead the way to success in agricultural production. To understand these principles is the reason for studying agricultural economics.

Of the recent writings on agricultural economics in Europe, that of Jouzier, a French writer, may be taken to illustrate the content of the phrase. "Philologists," says Jouzier, "tell us that the word economics is formed of two Greek words, which, united, mean laws, or rules of the household, that is to say, developing the idea which the ancients attached to the words, the manner of regulating the relations of the different elements composing the resources of the household, whether it be their relations to each other or to the members of the household, in order to insure the greatest prosperity of the family.

"The addition of the qualifying adjective, agricultural, does not change the meaning of the word 'economics' at all; it simply limits the domain to which it is to be applied. In place of saying 'the household' we must say the 'agricultural household.' But, as the agricultural household is the farm we shall say that *Agricultural Economics is that branch of agricultural science which treats of the manner of regulating the relations of the different elements composing the resources of the farmer, whether it be their relations to each other or to human beings in order to secure the greatest degree of prosperity to the enterprise.*

"These relations consist in (1) *relations of contact* (supplementary, complementary, or competitive) between the different branches of the enterprise, such as, for example, the simultaneous raising of cereals and animals on the same farm; (2) *relations of activity between the different means employed in the process of production*, as in the simultaneous employment of machinery and human labor; (3) *in relations of value*, between the means employed in production and the product itself; (4) *in commercial relations* with the people to whom farmers sell their products or from whom they buy goods.

"The domain of Agricultural Economics, then, covers the examination of each element of agricultural production, whether in connection with any one of the above named relationships

in particular, or with several of them together, for the purpose of obtaining the greatest net profit.

"We may consider Agricultural Economics as a science or as an art, from a theoretical point of view or from a practical point of view. If we consider it as a science or theory, it is the knowledge of the laws which govern the above named relations; if as an art or practical matter, it is the application of this knowledge in a limited, particular environment for the realization of results from these relationships."

It will be clear from this statement that Jouzier looks upon farm economics as (1) the science which treats of the principles which underlie the coördination of all the factors involved in farming (land, labor, equipments, and the various lines of production) in such a manner as will enable the farmer to secure maximum net profits, and (2) the art of applying these principles on a given farm.

Jouzier's definition may be accepted as describing that part of the field of agricultural economics which relates to the organization and the operation of the farm, but it fails to include all of the subject matter of agricultural economics as conceived in the United States to-day, and it fails to include the social point of view which needs to be considered as well as the individual point of view when recommending changes in our laws and institutions which affect the agricultural interests of the country.

Agricultural economics deals with the principles which underlie the farmer's problem of what to produce and how to produce it, what to sell and how to sell it in order to secure the largest net profit for himself consistent with the best interest of society as a whole. More specifically *agricultural economics treats of the selection of land, labor, and equipments for a farm, the choice of crops to be grown, the selection of live stock enterprises to be carried on, and the whole question of the proportions in which all these agencies should be combined.* These questions are treated primarily from the point of view of costs and prices. The economic basis for answering these questions is found in the price of land, the wages of labor, the cost of tools, machinery,

and live stock, and the prices for which the various products can be sold.

Agricultural economics deals not only with economy in production but also with the problems of justice in the distribution of wealth among the various classes of society with especial reference to the effect of the wages system, the land system, the credit system, the methods of marketing, the comparative standards of living of country and city workers, and the relative opportunities for accumulating wealth by the different classes, upon the farmer's share in the national dividend and upon the relative well-being of the agricultural population. This subject requires the attention of the agrarian statesman as well as that of the farmer. The farmer needs to understand the economic forces which underlie his success in order to help himself, and the statesman needs to understand these forces in order that he may pass helpful legislation with respect to land, labor, credit, taxation, marketing, etc., and in order that the necessary regulation of the farmer's activity may be carried out with a minimum of reduction in productivity.

While the economic principles which govern the management of farms can be formulated, it should be borne in mind that no specific *rules* can be laid down, which are of general application. Farms cannot be operated by rule of thumb. What is right practice at one time is wrong at another time, and what is right practice in one place is wrong in another. The best scientific training that could be given to farmers would comprise a *thorough knowledge of the physical and biological principles which underlie agriculture, the laws of economics which relate to agriculture, and a thorough system of accounting for the purpose of testing results on the individual farm.* Any system which purports to furnish a complete scheme of farm administration applicable to all conditions, is manifestly either Utopian or fraudulent. Such rules must be worked out upon and for the individual farm, or at most for well-defined communities where the conditions are similar.

Economics is scientifically coordinate with the physical and biological sciences in the study of agricultural problems. The

conditions and forces in the farmer's environment which influence his activities as a farm operator constitute the subject matter of agricultural investigation and education. In the early history of agricultural education, the economic aspects of the problem of the farmer received a large proportion of the space in the books on agriculture. This is true of the Roman books on Agriculture and it is true of the English works published prior to 1840.

With the development of Agricultural Chemistry, Agricultural Physics, Agricultural Bacteriology, Plant Pathology, etc., these aspects of the farm problem were brought to the foreground, and the physical and biological aspects became dominant in the publications on agriculture. The chemist, for example, has used the most approved scientific methods in his investigations. Naturally he has discredited much that was counted good doctrine on the subject of agriculture. But while they have discredited much that was once held as true, the scientists trained in the physical and biological sciences have not been able to replace the old with a complete system of knowledge for the farmer. Many of the bulletins published by experiment stations have been wrought out with great care by the specialist learned in some one science and then pieced together with the most unlearned notions regarding other aspects of the problem, and especially the economic aspects. For example, not long ago a chemist made a most careful analysis of some sugar beets grown in a given locality. He found the sugar content normal, and proceeded to draw the conclusion that sugar beets could be grown profitably in that part of the state, without giving any consideration to the quantities produced per acre, the cost of producing the beets, the cost of marketing the crop, the difficulty of securing labor, the relative profitableness of beets and other crops which would require labor at the same time of year, to say nothing of the tariff in its relation to the sugar industry. The farmers wanted an answer to the question "Will it pay us to grow sugar beets?" The chemist's work was a part, but only a part, of the scientific work required to answer the question, but to meet the demand for an answer, the wrong answer was given.

Bulletins of this character have brought home, to the men in charge of experiment stations, the truth that every problem is many-sided and that no experiment station results are ready for the farmer until the many sides have been studied by the many specialists with the requisite, preparation, and the results welded together into a harmonious statement of the whole truth about the question so far as it can be obtained.

The lack of this rounding out process means the issuing of half truths, and it is the issuing of half truths that has done much to discredit the experiment stations and to make farmers look upon scientific farming as proper fun for men of fortune, but poor business for farmers.

It is in the circle with the other scientists specializing in agriculture, devoting himself to the economic forces which influence the farmer, that the economist is finding a place. While economics deals with but one of the main groups of forces operating in the farmer's environment, yet it practically becomes the actively guiding science underlying farm management for the reason that while the functioning of physical and biological forces change but little from generation to generation, the resultants of economic forces are ever shifting, and it is necessary for the farmer constantly to watch the shifting of economic conditions; that is, the shifting of costs and prices, with a view to reorganizing his operations from time to time to fit the new conditions.

It is perhaps for this reason that some writers have used the term farm management to describe this field of research and education, which we here call "agricultural economics." This usage has the advantage of carrying some meaning to the mind untrained in economic terminology, but has the disadvantage of including much that is taught in other branches of agricultural education, and failing to convey any new and significant meaning. Literally "farm management" is the art of managing a farm. To manage a farm intelligently the operator should have a clear understanding of all the forces which in any way affect the results of his actions. Some of these forces are physical and are dealt with by the chemist, the physicist,

the geologist, the specialist on soils, or the climatologist; other forces are biological and are dealt with by the plant and animal physiologist, the entomologist, the pathologist, the geneticist, or the bacteriologist. A third class of forces which have much to do in determining what the farmer should do are social, that is, they are inherent in the relations arising among men because of the pursuit of farming as a means of making a living. These are called economic forces. Each of these sets of forces should be handled by specialists in modern institutions of education and research. If, therefore, the term "farm management" is preferred, it would be well to designate the particular phase of the subject. For example, one may properly speak of the chemistry of farm management, the physics of farm management, the biology of farm management, and the economics of farm management, in which it will be noted that the term "agriculture" as commonly used is simply replaced with the somewhat narrower expression "farm management." The solution of this problem of terminology may be to adopt the term "farm economics" as being both simple and scientifically correct.

The Report of the Committee on Courses of Study of the American Association of Agricultural Colleges and Experiment Stations in 1911 throws further light upon this subject. "The subject taught or investigated under the head of farm management, as related to the organization and management of individual estates devoted to agriculture in the judgment of this committee necessarily involves the application of the principles of economics. These principles constitute the scientific basis of farm management and give this subject its only just claim for consideration as having a pedagogical value entitling it to a place in courses of study or a scientific standing as related to problems of investigation.

"It is true that the farm manager should take into account what is taught under agronomy, animal husbandry, agrotechny, and rural engineering, but he is chiefly and essentially concerned with the application of economic principles to the conduct of his business; outside of economics there is nothing which

can give his business a sound scientific basis. The mere collection of the details of methods of conducting different farms will not suffice. There must be the reference of these matters to some underlying principles. When this is done it is clear that farm management comes within the domain of economics because the purpose of farming is to secure a profit from the use of the land and its equipment. If profit is lost sight of, the farm manager, though trained in all branches of farm practice, is doomed to failure."

For practical purposes farm economics may be divided into the economics of production, the economics of marketing, and the problem of maintaining and improving the economic and social position of the farmer.

The economics of production centers upon the choice of crops and live stock enterprises, the choice and organization of the instruments of production, and the principles which underlie economy in the operation of the farm with a view to optimum results. The economics of marketing treats of the actual movement of produce from producers to consumers, the processes involved, the middleman services rendered, the fairness of the charge made for the middleman service, and methods of establishing economy and justice in these distributive processes through education, coöperation, and government activity or regulation. The problem of maintaining and improving the economic condition of the farmer centers upon those dynamic forces which are gradually bringing about changes in the farmers' economic well-being as shown in the ownership of property, the standard of living, etc.

All three of these phases of farm economics should be viewed from the standpoint of the individual farmer who desires maximum returns for what he puts into farming operations and also from the standpoint of the statesman who desires maximum well-being for the nation as a whole. The individual interest may conform in the main to the common interest, but where this is not true government activity may be essential in order to establish harmony of interests. The individual point of view should be studied by the farmer that he may know his own

interest, and by the statesman in order that he understand the forces he is proposing to control. The national point of view should be studied by the statesman in order that he may know the extent to which individual interest conflicts with the general interest and in order to know the best means of harmonizing these interests so far as possible. The farmer, as a good citizen, should be interested in the national point of view as well as in the individual point of view.

CHAPTER II

ECONOMIC MOTIVES AND IDEALS IN AGRICULTURE

THE primary motive which impels most men who engage in farming is the desire for food, clothing, shelter, and the many forms of recreation. The primary ideal, then, is to secure the maximum results in money or products for direct use per unit of effort put forth.

When one studies man's motives and ideals, one finds a very complex mixture of motives and a great variety of ideals. Some of these motives are economic, some are social, some are rational, some are irrational, some are emotional, some are religious, and others are legal in character. In some instances one class of motives dominates; in other instances an almost entirely different set of motives will be found to impel the farmer to action.

1. *The desire for the means with which to satisfy one's wants.* In the minds of many farmers the desire for money stands out as the dominant reason for working. In some instances the use to which the money is to be put is more or less secondary in the mind of the worker. The extreme case is the miser who wants money primarily to hoard, or with which to buy land for the pleasure of its possession. But the more normal form of this economic motive is the desire for money with which to buy food, clothing, shelter, and various forms of entertainment. But even in the single man working for wages, this is not the sole factor in determining where he will work or how well he will work. There are many direct satisfactions which often seem equally important. The way in which the employer or his wife speaks to the hired man may seem at times more important to him than the money which he receives. Personal likes and dislikes, therefore, become very important secondary

factors in impelling men to action. But the sum total of enjoyment to be secured by the satisfaction of one's own individual wants is relatively small compared with the satisfactions derived from the larger relations of life.

2. *The desire to satisfy the wants of others.* A motive of outstanding importance with practically all the mature men engaged in agriculture is the desire for a home and a family. As the young man grows older, he thinks less and less of his own immediate satisfactions and more and more of the satisfactions of others. Pope described this change in his "Essay on Man":

Self-love but serves the virtuous mind to wake,
As the small pebble stirs the peaceful lake;
The center moved, a circle straight succeeds;
Another still, and still another spreads;
Friend, parent, neighbor, first it will embrace,
His country next, and next all human race.
Wide and more wide, th' o'erflowing of the mind
Takes ev'ry creature in, of ev'ry kind.

This motive for home and family may be of the simplest instinctive form, or it may take the form of great family pride, desire for a large and dignified family estate, for education for the whole family, for social standing in the higher classes of society, etc. In its higher forms this motive is sufficiently strong to impel action throughout the whole lifetime of a man without completely attaining the ideal.

3. *Pride in one's work.* Many a young farmer takes great pride in the straightness of his furrows, in the straightness of his corn rows, in the cleanness of his corn fields, in the high production per acre of all of his crops, in the fine appearance of his work horses, in the high productivity of his milch cows, and in the general upkeep and tidy appearance of his farm. This is an exceedingly wholesome motive and not only yields a great amount of personal satisfaction, but results also in increasing agricultural production and maintaining the appearance of the countryside.

4. *The accumulation of landed property.* This motive often leads men to strenuous activity, when other motives are rela-

tively ineffective. The writer once knew a man who had followed this motive to the extreme of acquiring land to the extent of about 2000 acres, but his farm presented a very shabby appearance, and none of his land was handled according to the rules of good husbandry. When asked by what method he was able to accumulate so much wealth he said, "It is not what you make but what you save that counts." The personal appearance of the farmer as well as that of his farm showed the stultifying effect of putting the accumulation of wealth ahead of living a satisfactory life.

5. *Joy in work.* Many a farmer enjoys driving a team, watching the clean soil turned over by the plow, watching the crops grow, and caring for live stock. So satisfying is this life to many a man that he will continue his activities as a farmer year after year, even though he knows that men in other occupations are winning very much more money than he, for he is wise enough to recognize that he is paid in direct satisfactions as well as in money, and that much of the richness of his life is due to things which money cannot buy.

6. *Habit.* With many an unthinking farmer, habit is the substitute for conscious motives. Because he was trained to do farm work, he continues to do the work in the same way and in about the same amount year after year, and this often continues long after he has acquired a competence. Habit may or may not be a good substitute for conscious motives. Where by habit one follows the higher types of farming the results may be as good as if conscious motives were in operation, but with the progress of agriculture, farming by habit will ever be lagging behind, and for this reason it will usually be true that the man with conscious motives will be far ahead of the man who works as a result of habit.

7. *The desire for ease and time for enjoyment.* In that complex set of motives which dominate the life of man are found those which retard his economic activities as well as those which promote productive work. This motive is illustrated in the laborers of certain races who quit work for the remainder of the week so soon as they have earned enough to support them

one week. It has been said that in recent years the laborers in Porto Rico and many negroes in the southern part of the United States, as a result of higher wages, knock off as early as Thursday noon when previously with a lower wage rate they worked until Saturday noon. Thus, it would seem that the economic motive is strictly limited, and that an increase in wages instead of increasing the labor supply may sometimes reduce the labor supply. Another illustration of this same character is found in the farmer who retires in the prime of life because he has accumulated a competence. Thus, as the man of lower civilization works part of a week in order that he may earn enough to live a week, so the retiring farmer of this type works only part of a lifetime in order that he may have enough to live upon for a lifetime. We have here essentially the same motive, the difference being that the latter has a longer-time point of view.

8. *Patriotism and community spirit as motives.* In times of great national stress and great need of agricultural products many a farmer will work longer hours and more strenuously than he otherwise would because he feels it his duty to farm more and farm better in order that he may in this way contribute to the national welfare. It is also true that many a man takes great pride in the standing of the agriculture of his native state and is willing to do many things to promote the interests of agriculture not only for his own benefit, but for the benefit of all the farmers of the state. Then, again, the community is sometimes the geographic limit of a spirit of mutual helpfulness. A community spirit may become established which makes every one desire that his community shall be known for its fine-appearing farms and the quality of its products. More might be done in the way of stimulating community spirit. Public opinion developed by community leaders might be a means of getting more farmers to destroy the noxious weeds which are spreading from farm to farm and which one man cannot eradicate from his farm unless his neighbors attempt to do likewise. It is hard to say to what extent public opinion forces men to be patriotic and public-spirited in their actions, and to

what extent this action arises from the independent character of the man; but in either case it is effective.

9. *Legal compulsion.* The activity of many farmers is influenced by legal compulsion. For instance, the law requires that milk sold in cities shall contain a minimum percentage of fat. It prescribes the maximum number of bacteria and the maximum amount of dirt which can be sold with the milk. It also prescribes the kinds of weeds which must be destroyed before seeding and in many ways regulates the live stock industry. To the extent that the farmer possesses right motives, legal compulsion is unnecessary, but there are usually some in every community who would not live up to the standards laid down by law if it were not for the necessity of doing so.

10. *Religion and the idea of duty.* In the minds of many farmers the religious motive to action is a very important one. There are farmers who look upon themselves as stewards of the property they possess and feel that it is their duty to handle their property to the advancement of religious ideals. There are very many who are much influenced in their dealings with other men by the ideas of right and wrong which have been established by religious teaching. Religious ideas with respect to the keeping of the first day of the week as a day of rest and religious education, as well as the keeping of various religious holidays, may to some extent limit the amount of time devoted to agricultural production and increase the amount of time devoted to self-improvement and to the direct satisfactions of life. It is probable that if farmers as a class should cease to observe Sunday as a day of rest and religious activity and devote seven days in the week to farm work, they would get no more pay for the seven days than they are getting for the six. It seems to be true that city workmen are getting as much pay for a shorter day as they formerly did for a longer day.

With this complex set of motives in operation, it is certain that maximum net return in money and in products for direct consumption, primary though it be, is too limited an ideal for the farmer.

In the mind of the high-class young farmer, a life for him-

self and his family, in accordance with a high standard of comfort, and right relations in the community, will give purpose and force to the primary economic motive and hold it in its right position as a means to an end, but not as an end in itself. With the passing years, and the accompanying accumulation of wealth, the primary motives weaken, and the higher motives come more and more to dominate. Without the desire to render service to others, there is danger that the latter part of a man's life may be wasted; but with this motive ever strengthening, man may continue action.

The hired man may well have the motive of economic gain to stimulate him to earn and accumulate wealth and to strive to improve his ability in order that he may climb to the position of a tenant farmer, where he can safely assume the responsibility of a family. For the tenant farmer, to achieve a comfortable living and accumulate funds with which to buy a farm, and to be well thought of in his community, is a praiseworthy ideal. Later the education of the family and the improvement of the farm should be supplemented with some community service. The critical moment comes when the farm is improved and paid for. Unless the higher ideal of service to others comes into the foreground, there is danger of inactivity just at the time when the farmer has the capital to farm in the proper manner, and just at the time when he is most worth while as a community leader, both in economic, social, and educational work.

Stimulating the higher motives. Much can be done to stimulate in men the desire to be of service to their fellow men by farming well and living in right relations with their community. The "Honorary Recognition" given to farmers by the University of Wisconsin for unusual service in some branch of agricultural or country life work is intended to stimulate the higher motives in others. The Pennsylvania Railroad Company publishes a leaflet entitled "Information for Employees and the Public" which stimulates the higher motives of the men in its employ. The pictures and life sketches of the men who have been trustworthy and public-spirited in

their work are printed by this company and put into the hands of all the employees. The local leaders in rural communities, and extension workers, agricultural papers, and every other educational agency touching rural life should give due emphasis to the broader and higher motives on the theory that "What is honored is cultivated."

This sketch of the complex motives which impel the farmers to action prepares the way for an understanding between the reader and the author on one important question which must be agreed upon if the reader is to benefit from the following discussions. The purpose of the author is not to explain how men will act under given conditions. The motives of men are too complex and too varied for this. What is attempted is to show what it is, the economic interest of the farmer to do under given conditions. To the extent that this can be done, the principles of farm economics will prove a guide to the farmer in organizing and operating his farm, and to the statesman who seeks to improve agricultural conditions.

CHAPTER III

DEVELOPMENT OF THE FARMER'S ECONOMIC PROBLEM

THERE was a time when each farm family or each small community tried to produce for itself all the food, clothing, and shelter necessary to its well-being, — each family carried on both agriculture and manufactures. This was the ideal in western Europe in the middle ages and it has not been long since it was a necessity with the pioneer farmer in America.

The beginners of American agriculture were Englishmen, and the course which they first took in the New World was greatly influenced by the stage of industrial progress with which they were familiar at home. In the seventeenth century, the greater part of the land in England was divided into small holdings cultivated by tenants or by landowning farmers who looked primarily to the production of such crops as were needed in their own households. In some parts of the country, however, the organization of agriculture had taken on a very different form. Large areas of land in the southeastern part of England had been made into sheep farms on which wool was produced primarily for the market.

Thus in the seventeenth century, England had two types of farmers. The peasant farmer was a hard-working, painstaking tiller of the soil who was able to live "unto himself." The wool and flax which were grown on his little farm were manufactured by the farmer and his family into the various articles which were desired for home consumption. The peasant's house was usually of simple construction, such as the farmer could make for himself out of such materials as could be found in the immediate neighborhood. Cottages made of mud and straw were very common in the central and northern counties. This farmer

was just the kind to succeed in a new country where commerce could not be counted upon to supply such stores of goods as the wants of men demand.

The second class of English farmers had been in the habit of producing primarily for the market, and depending upon the market for the supplies of clothing, luxuries, etc., which it was their desire to consume. They had passed on to that stage in the evolution of industrial society where the commercial side of their agriculture dominated, and without a market they could not well survive. Having before our minds these two classes of English farmers, let us next take a glance at the country which they were to occupy.

The new country provided new crops, such as maize, potatoes, and tobacco, the culture of which could be learned from the Indians. The climate of the eastern coast of America is very different from that of England, and much colder in winter than the settlers may have expected to find in a latitude so much south of their mother country. The Atlantic coast presents two very different areas: tidewater Virginia, with her mild climate, rich soil, and slow-flowing rivers which were well suited for becoming the arteries of commerce; and New England, with her more severe climate, her poorer soil and rough surface traversed by swift-flowing streams which did not lend themselves readily to the purposes of transportation.

Both of these classes of English farmers came to America. The first class, the self-sufficing farmers, got along well in New England. They learned to grow maize and potatoes. They found plenty of fish in the streams. Their old habits of building houses for themselves, manufacturing their own clothing, and producing and preparing for winter's use abundant supplies of food, made them the natural inhabitants of the isolated New England of that time.

But the commercial farmers were not so successful in the North as were their less pretentious fellow countrymen. They sought diligently for some agricultural product which could be transported to London with profit; for it was from London that they could draw the comforts and luxuries which they had

learned to consume, but which they were unable, themselves, to produce. As it was unprofitable in those early days to ship grain to London except in years when the price was abnormally high, and as no staple was found which would bear shipment to Europe, commercial agriculture was unable to play an important rôle in New England.

In the South, the commercial farmer met with better success. There, as in New England, a thorough search was made for a staple which would form the basis of a profitable system of commercial agriculture. The production of silk was attempted, but with little or no success. Wine was looked to as a possible solution of the problem, but this, too, led only to disappointment. Tobacco was tried with success in the southern colonies, and the South was launched upon a career of her own. Tobacco had become fashionable in England, and commanded a high price. This was the opportunity of the commercial farmers. They could produce tobacco and send it by the cargo directly from the river wharves on their own plantations to the markets of London. This enabled them to order whatever they pleased from the merchants of Europe.

The labor problem arose. Free white men could do better working for themselves in a country where rich soil was to be had for the taking. Contract labor was resorted to, but this did not satisfy the demand. The African negro was introduced to supply the tobacco plantations with the desired number of laborers. And thus, it was tobacco and slaves that made commercial agriculture possible and profitable to the farmers of the South and made possible the successful operation of the large plantations of Virginia, which were comparable in size and dignity to some of the estates of the country gentlemen of England. The small farmers were, sooner or later, crowded out of the fertile lands conveniently accessible to water transportation in tidewater Virginia. Plantation agriculture based on tobacco, rice, and cotton dominated the South, and it is the conditions which have grown out of slavery and the plantation system which provide the leading problems of Southern agriculture to-day.

In the North the self-sufficing economy remained important for a long time. Small farmers from New England, New York, and Pennsylvania gradually moved westward, and it was the same conditions which made them successful in the early settlement of the North that fitted them for the life of the pioneer. Since the days of railways, new countries can be settled successfully by commercial farmers, but it was only yesterday that the self-sufficing pioneer ceased to be an important factor in the development of the resources of the United States.

The self-sufficing pioneer farmer was free from the power of trusts and corporations, but his life was full of hardships such as few farmers would now willingly endure. The following quotation, descriptive of the life of a pioneer family during their first year in their new home in western Pennsylvania, in 1773, sets forth the hardships of these pioneers in a very pathetic manner. "For six weeks we had to live without bread. The lean venison and the breast of the wild turkey we were taught to call bread. The flesh of the bear was denominated meat. This artifice did not succeed very well. After living in this way for some time we became sickly, the stomach seemed to be always empty, and tormented with a sense of hunger. I remember how narrowly the children watched the growth of the potato tops, pumpkin and squash vines, hoping from day to day to get something to answer in the place of bread. How delicious was the taste of the young potatoes when we got them! What a jubilee when we were permitted to pull the young corn for roasting ears. Still more so when it had acquired sufficient hardness to be made into johnnycakes by the aid of a tin grater."¹

The agriculture of the North has gradually been transformed until now the commercial element dominates. Manufacturing was for a long time a household industry carried on by nearly every farm family, but in the course of time more and more of this work was turned over to those who made a specialty of manufactures. The swift streams of New England were harnessed and made to turn the wheels of industry. This

¹ Rev. Jos. Doddridge, Hart's "American History," Vol. II, p. 387.

movement followed but slowly the path of the pioneer farmer, yet in the course of time the older parts of the North became noted for their manufactures. With the development of manufactures, a market has grown up for the ordinary forms of farm produce, such as wheat, oats, pork, beef, and dairy products. As markets have developed and the means of transportation have been improved, the old self-sufficient farming has been changed into a commercial economy, until the remnants only, of the old system, are now to be found. This change has come about because men have found that a given amount of economic activity will produce the means of satisfying a greater number of wants when each man devotes himself more or less exclusively to some one line of production. This specialization in production brings larger returns because (1) some parts of the world are especially well suited for the production of certain products, (2) some men are especially well fitted for performing one kind of work while others can best do something else, and (3) since the invention of power machines in manufactures large scale specialized production is much cheaper than the old handicraft system.

As a result of the development of commerce in the products of agriculture, the modern farmer has found it profitable to look primarily to the production of a few staples which can be put upon the market in exchange for the great variety of things which he desires to use. Incidentally many modern farmers produce certain articles, such as fruits and vegetables, primarily for the use of their own households, and here they are free to follow their own instincts, as did the self-sufficing farmers of olden times, and produce those things which they like best to consume; but in the production of the staples of commerce they must, if they would best succeed, produce those things which will enable them to obtain upon the market the largest possible means of supplying their wants, in return for the effort which they expend upon their farms.

From the point of view of the farmer, then, the first problem before us in the economics of agriculture pertains to the selection of land and the management of a farm in such a manner as

will enable the farmer, one year with another, to win the *largest net profits*. For example, if a farmer is operating land in a given community he should endeavor to determine which grade of land to cultivate, which kinds of crops to grow, how intensely the land should be cultivated in the case of each crop, and how large a farm he should attempt to operate in order that, after he has counted out the rent of the land (or the interest on the value of the land, the taxes, and the cost of repairs, etc., if he owns the land), the expense (in the forms of interest and wear and tear) to which he has been put for the use of equipments, that is for the use of capital goods, and the cost of hired labor, the total net profit which is left to him and his family in return for their own labor, skill, and enterprise shall be as large as possible.

From the standpoint of economy in production, commercial agriculture is, without question, far superior to the old self-sufficing system, for it undoubtedly enables the farmers to win a large net profit; but from the standpoint of justice in distribution, the commercial system has been challenged, and there is unquestionably a chance for improvement in this regard. It is believed by many that when a given farmer puts forth a certain amount of labor and capital in the production of goods which he sells upon the market for one hundred dollars and then invests in the various articles which he wishes to consume, it will be found that the commodities which he is taking home in return for his products were produced by much less labor and capital than the amount which he expended upon the commodities which he took to the market. Certainly where such a condition exists it is an injustice to the farmer, even though the articles which he received in this way would satisfy many more wants than he could hope to satisfy if he tried to produce for himself every article which he consumes.

It has been alleged that there are men who do no work, but simply sit at certain points where exchanges are made and demand that their baskets be filled. To avoid this alleged injustice in the distribution of wealth, it has been proposed that "Farming Corporations" be organized, and that these corporations make it their business to produce for themselves

everything they want to use. It is proposed that no attention shall be paid to the commercial world nor to commercial values, but simply to the wants of the farmers and their families. Every kind of agricultural product which may be desired for use by the members of this corporation is to be produced by them. Wool is to be produced and converted into clothing, beef is to be produced for home use, and the hides of the animals converted into shoes for home use. Thus to avoid unjust treatment it is proposed to throw away many of the advantages of the commercial system and revert the old self-sufficing system in agricultural production.¹

L. H. Kerrick, who lived at Bloomington, Illinois, and who was in his lifetime a leading and successful farmer of that state, delivered an address at the Iowa Agricultural College, Ames, Iowa, a few years ago, in which he said in part :

"The farmer has, in my region certainly, become too much imbued with the spirit of commercialism. He has gone too far, I think, in the way of producing things to 'sell.' He raises big crops of corn and oats to sell, or feeds many cattle and hogs for the market. He sells these at the other fellow's prices. Then he turns about and buys, at the other fellow's prices, supplies of various kinds that he might easily have produced on his own farm. By this practice he puts himself twice in the enemy's hands — once when he sells, and again when he buys. This is not the highest and best idea of living by farming. The first thing a farmer should do is to surround himself in his farm home with everything he can make or produce that will promote the health, comfort, safety, and pleasure of himself and family. This is what the farm is for, first. And how few good and needful things there be that may not be produced and provided on a good farm and in and about a real farm home! I do not attempt to name the innumerable good things of his own garden and orchard and field — all prime, fresh, and exactly to his liking, which the provident farmer may have if he can only get that idea of raising things to sell out of his head or at least modified, and get that other idea of producing things on his own farm for his own use. If farmers everywhere would think first and work first to provide for their wants on their own farms, then they might be able to set the price on the surplus they have to sell. Then the surplus

¹ Wilber Aldrich, *Farming Corporations*, p. 169.

would not be so overwhelming in volume. Then there might be competition among the buyers of his surplus. The consumer might not then be so able as now to sit complacently waiting to be solicited to buy this enormous surplus at his own price. The railroad people then might take on better manners and be willing to give a more nearly just rate, and they might be more careful to give good service.

"The farmer with the right idea of farming and of farm life and of farm opportunities is the man I have most faith in to curb trusts and corporations generally — such as need curbing.

"The makers of machines and implements and of barbed wire and of all that sort of thing cannot eat their stuff — they must sell to get any good out of their product. They cannot live at all without selling. But the right kind of a farmer can live a long time without selling his product — he can eat it and live. Suppose the other fellow asks you an exorbitant price for his wares. Just let him keep them, because he can't eat them; and to get something to eat, he must sell. But you, my farmer friends, can keep yours a while and be living like kings — eating your bread and meat and good apples and fresh butter and eggs and milk. The other fellow can only keep his just a little while, until you hear the prices of his wares are cracking. The farmer is a trust breaker, if he only knows it. I have little faith in legislatures and courts and magazine writers and orators, as trust breakers. But the farmer with the right idea, as I have been trying to illustrate, can fortify himself in his farm home for a much longer siege than the manufacturer or the railroad manager can put up against him. And the beauty of it all is, the farmer can be happy all the same, and all the time."

That too many farmers neglect to provide their families with the variety and abundance of fruits and vegetables which they might and should produce primarily for home use, and that they also generally fail to appreciate the possibility of creating for themselves beautiful surroundings by planting flowers and shrubs and trees, is frankly admitted. This condition of affairs is to be regretted, and should be remedied. One of the greatest of economists, John Stuart Mill, has said, "Solitude in the presence of natural beauty and grandeur is the cradle of thoughts and aspirations which are not only good for the individual, but which society could ill do without."¹

¹ "Principles of Political Economy," Book IV, Chapter VI.

We need more of the "thoughts and aspirations" such as the "natural beauty and grandeur" of the ideal country home may inspire, and it is certainly to be hoped that the American farmer will avail himself of his natural opportunities and surround himself with everything which will add to the dignity and beauty of his home.

But if these beautiful surroundings are to be created they must first be desired by the farmers, and it will certainly be admitted that the desire for food, clothing, and shelter naturally and properly come first and should be satisfied before much attention is given to the creation of beautiful surroundings; and, again, to enjoy the beautiful surroundings, one must have leisure, and in order to have time, after satisfying the more urgent wants, to create and enjoy beautiful surroundings, it is important that the farmer avail himself of the most economical means of satisfying these wants. We object, therefore, to the general principle laid down by Mr. Kerrick, that farmers everywhere should "think first and work first to provide for their wants on their own farms," rather than look primarily to the production of those things which will give them the greatest purchasing power in the market. We believe the latter method to be the one which will bring the largest means of satisfying wants for a given amount of exertion, whereas, Mr. Kerrick's suggestion points towards a reversion to the self-sufficing economy of earlier times, and to a sacrifice of much of the benefit which has resulted from the extension of commerce and from specialization in industry.

There are, doubtless, many injustices in the present complex commercial system of agricultural production; but, in spite of this objection, the commercial system is superior to the old self-sufficing economy which was desirable only in an earlier stage of economic society when the dangers to commerce were so very great and the means of transportation had been so little developed that the farmers could gain little or nothing by producing for the market. Modern agriculture is not entirely commercial, yet production for the market is the dominant feature. The commercial system has replaced the self-suffic-

ing system because it brings larger returns for the efforts expended, and our aim should be, not to revert to a less economical system in order to avoid the evils which have arisen, but to remove the evils which accompany it and thus perfect the present commercial system.

When the farmer follows the rule of seeking the largest net profits, he will not be bound to any one system, he will produce for home consumption just to the extent that he can do so more economically than to buy upon the market. That which is good practice in this regard at one time and place may be bad economy at the same time in another place, and in the same place at another time.

Producing for the market has made farm management a complex problem. The farmer can no longer look within the limits of his own domain and find all the information needed for the guidance of his husbandry. If the farmer would succeed he must give heed to the demands of millions of people, most of whom he does not and cannot hope to know. He must give thought also to other farmers who may be producing the same article for the market. His knowledge of what other farmers are doing is limited to such statistical information as can be secured by public and private bureaus of information regarding what has recently been produced. Fortunately, the farmer finds in market prices the record of the present results of supply and demand and may use prices thoughtfully studied through a long period as a guide to his future actions. The physical and biological environment given, the prices of the products and the prices of the agencies of production — land, labor, and equipments — determine what to produce and how to produce it in order to secure maximum profits.

The commercial economy, with its farm machinery, its elevators, its mills, its packing plants, its railway and steamship lines, has made the total labor of the people much more productive. Every one is benefited. Where some are receiving more than a fair share, a remedy must be provided through such control of the marketing system as will give a fair share of the proceeds to each one who helps in their production, but the

farmer should, so far as possible, take advantage of the great economy in production due to the commercial system. The farmer should study his soil, his climate, his labor force, his market, and his costs, and adjust his farm operations in such a manner as will enable him to win a maximum profit in cash and direct satisfactions.

The state should so regulate the marketing system, especially with regard to the sharing of the consumer's dollar among those who produce the goods, that the farmer will be in a position to live as well and save as much from his earnings as those of similar ability with like investments engaged in other occupations. If this is not done, there is danger that those in other occupations will gradually accumulate wealth, buy land, and in the course of time make the farmers subject to them as landlords. The objective point in agricultural economics is the well-being of farmers as an integral part of a nation. This well-being demands justice in distribution as well as economy in production. Both of these goals are kept in mind as the purposes in view in the chapters which follow.

CHAPTER IV

ECONOMIC GOODS AND THEIR VALUATION

THE purpose of farming is to produce goods which are needed directly or indirectly to satisfy the wants of man. Any material thing or personal service which directly or indirectly satisfies a human want is called a *good*. Tobacco satisfies a want, hence it is a *good*, in the sense in which the word is used in economics. It may seem like a paradox to call a bad thing a good; but this will be understood when one bears in mind that it is economic qualities rather than moral qualities that are here being considered. Goods satisfy desires. Desires may be moral or immoral. Ruskin divides all goods into two classes, those the use of which he approves he calls wealth, those the use of which he disapproves, because he thinks they are detrimental to man, he calls "illth."

Economic goods. Some useful goods are generally found without any effort on the part of man in great abundance in the form, at the place, and at the time they are needed. Such goods are called free goods. Air, for example, is a free good. But when a person commences to make a list of the things he wants, he finds free goods rather infrequent on the list. For most goods some effort must be put forth in order to secure a supply. For example, farm products, the products of the mines, and the products of the factories all require effort in their production, hence they are limited in quantity and are called economic goods.

Causes of scarcity. Goods which can be increased in supply indefinitely by the use of land, labor, and capital are scarce because of the labor and sacrifice required in their production. This may be called *cost of production scarcity*. This class includes most agricultural products. It will be recognized that

while in the long run the supply of farm crops depends upon the activities of man, it is also true that variations in seasons and the attacks of pests influence greatly the supply produced in any one year. The acreage of a given crop is in the control of man, but the production per acre is in so large a measure determined by the weather that the total production in any one year is very uncertain, hence the degree of scarcity of farm products in a given season is *in a large measure the result of natural forces beyond the control of man.*

The degree of scarcity of economic goods is in many cases influenced by men who are in a position to limit the supply with a view to demanding a price higher than would prevail under competitive conditions. Scarcity created in this way is called *monopoly scarcity*. Monopolies arise out of natural conditions and out of laws granting patents, trademarks, copyrights, etc. The occasion of monopoly is not the size of the business or the character of the organization, but the essential unity of control. Unity of control makes it possible to limit supply in such a manner as to command a price which will yield maximum total profits for the monopolists. It is in this sense that we speak of monopoly scarcity.

Economic goods may be scarce because of an absolute limitation on the supply, that is, there is no way of increasing the supply. *Absolute scarcity may be permanent or temporary.* A beautiful picture painted by an artist who has passed away has been given as an example of absolute scarcity which is permanent. Here there is no chance of increasing the supply of originals at any time.

Absolute scarcity may exist temporarily in many farm products. This is a matter of great interest to the farmer. When the wheat crop of the United States and Canada has been harvested, nine months pass before the supply can be increased from this source. If the supply is not enough for the normal demand, prices tend to rise and the demand fall until there is a balance between the supply and the demand. The prospect for a new crop may be unusually good, but the new crop to be harvested in July cannot be used in June. The supply of old wheat is

temporarily in the class of absolutely scarce goods. Potatoes would serve as another example of temporary absolute-scarcity goods.

Goods must be both useful and scarce in order to be classed as economic goods. Goods may be useful because they possess certain physical and chemical properties; for example, wheat contains starch and gluten which makes it a valuable food, and cotton fiber possesses tensile strength which makes it useful in the manufacture of cloth. This is called *elementary utility*. Goods are useful because of the elements they possess. Wheat when transformed into bread has additional utility. Cotton fiber has additional utility when transformed into clothing. This kind of utility is called *form utility*.

When the flour and the clothing have been manufactured, they may be a long way from the men who are to use them. By shipping them to the places where they are most wanted they are more useful. In this way *place utility* is added to them.

The wheat crop is harvested largely in one season and consumed the year around. Those who store the wheat or flour for many months in order that consumers may eat bread the year around have added *time utility* to these goods.

It has been suggested that the advertiser adds utility to the goods. The fact would seem to be that advertising operates on the prospective consumer rather than upon the goods and changes his state of mind regarding the goods. This may increase the individual estimate of the importance of a given *elementary utility* or a given *form utility*.

Some goods will stand long shipment and long storage without danger of deterioration. For example; wheat, wool, and lumber are in little danger of deteriorating in shipment and storage. These we shall call *durable goods*. Other goods are in great danger of deterioration in transit and cannot be kept long in their original form. Strawberries and milk are examples. They have commonly been called *perishable goods*. One of the triumphs of modern inventive genius is the successful conversion of perishable goods into durable goods by dehydration, canning, and other methods of preserving.

Economic goods may again be classified as permanent and as temporary goods according to the number of times used. For example, a piece of cotton cloth may be used many times and through a series of years, hence it is here called a permanent good, whereas wheat flour, in the form of bread, is used but once and is called a temporary good.

There is a close relation between the degree of scarcity of a good and the intensity of the desire which people will have for it. Other things being equal the greater the scarcity of a given good, the higher will be the intensity of the desire for it; the greater the abundance, the lower the intensity of the desire. Common observation teaches us that the more completely one's desires for a given article are satisfied the less he will give for an additional supply of that good for his own use. The converse of this fact is that in order to induce people to consume more products it is necessary to lower the price to correspond to the reduced satisfaction resulting from the additional units of goods consumed. At a higher price less will be consumed; at a lower price more will be consumed.

It is obvious that the quantity of the various farm products demanded will depend upon a number of conditions. Other things being equal, (1) *the higher the individual estimates of the importance of the goods in the minds of the great mass of consumers, the greater will be the demand.* (2) *The greater the incomes of the consumers, the greater the demand for goods.* (3) On the other hand the very thing which great demand tends to create, namely, high prices, tends to reduce the demand so that the *demand varies inversely with the price.*

The exchange value of goods. It has been seen that in order to be economic goods, that is, goods with a value placed upon them, goods must be both useful and scarce. There is a great difference in the usefulness and in the abundance or scarcity of different goods; hence there is a corresponding difference in their exchange values. Exchange value has been defined as the *quantitative ratio in which goods or services are exchanged.* For example, if one bushel of wheat will exchange for two bushels of oats we think of wheat as worth twice as much

per bushel as oats. For the sake of convenience it has become the custom to value all other articles in terms of one article which is made by law the standard of value. In most countries gold is the commodity decided upon as the standard of value. The amount of gold for which a definite amount of a given commodity will exchange is called the *price* of that commodity. In other words, *price is value expressed in terms of the standard of value*, or as we commonly speak of it, *in terms of money*. The value of farm products may remain the same, when expressed in terms of each other, and yet the prices of these products may all change because of a rise or fall in the value of gold. The value of a given weight of gold (25.8 grains 9 tenths fine) may be looked upon as the measuring stick with which the values of other products are measured.

The exchange value of a specific good at a given time is determined by its *relative abundance*, that is, by the supply in relation to the demand for this good when compared with other goods.

Behind the fact of demand, as has been noted, is the more fundamental fact of human wants. The desire to satisfy wants impels men to produce supplies of utilities, *i.e.* things which satisfy wants. The effort which man must put forth in order to gain the means of satisfying his wants sets a limit to the supply of economic goods. It usually happens that long before all of the wants of a man are satisfied, the pain of exertion becomes so great that it more than balances the possible pleasure which might be produced by consuming the products of further exertion. So long as there is an unsatisfied desire for an article, that article will have some value placed upon it. The relative intensity of the buyer's desire for an article determines how highly he will value it, and what price he will be willing to pay for it; but the price which must be paid determines how much of the goods he will take for his own use and how completely the want will be satisfied. In short, the higher the price the more intense will be the desire which will be left unsatisfied.

On the other hand, the natural facilities for increasing the

supply will determine how high the price must be before the producer can afford to increase the supply. Marshall says, "For long periods the supply price is that which is just needed to call forth those new investments of capital, material and personal, which are required to make up a certain aggregate volume or production."¹ The higher the cost at which the producer adds an increment to the supply, the more limited the total supply that will be put upon the market; but the smaller the amount of an economic good consumed, the more intense is the desire for it and the higher it is valued. Thus it is that the *marginal utility*, or the intensity of the last want which is satisfied, tends to adjust itself to the cost of producing that share of the supply which is produced under the most unfavorable circumstances. But it is also true that the price which is offered at a given time, and which corresponds to the marginal utility at that time, determines the maximum amount which can be expended in the production of a given article with profit, and hence determines ultimately how far down the scale of less and less favorable circumstances its production can be carried on. Thus it is that the forces which lie behind the demand for an article, and the conditions under which the article may be supplied, regulate its price.

Causes of fluctuation in values. Values may fluctuate from year to year because of changes in the quantity produced, or changes in the quantity demanded, that is, changes in the supply or in the demand. Fluctuation in the annual production may be due to the climate, to the ravages of insects, or to the conscious changes in the plans of a considerable proportion of the producers. The more durable the product the less the value will fall as the result of an unusually large crop. A portion of the supply can be held over until the next year. The fact that wheat can be held over at a relatively small cost and without losing its usefulness, while potatoes of one year's production have little or no value after the new crop becomes generally available, explains, in part, why a given variation in the wheat crop influences the price less than the same propor-

¹ Alfred Marshall, "Principles of Economics," third edition, p. 448.

tional variations in the potato crop. The prices of farm products are influenced by the fact that most of the supply of a given product becomes available during a small portion of the year, and this supply must last until the next year's supply is ready for use. A factory manufacturing steel rails, copper wire, or cotton cloth may put out a continuous flow of goods, but with most farm products the output is intermittent. The tendency is for the price to be low when the greatest supply becomes available, and high in the period prior to the arrival of the new supply. This is due to the fact that a part of the supply must be stored, which involves the expense for storage room, interest on the money invested in the product, and a loss due to shrinkage.

The variation in demand due to changes in prices is very different with different classes of goods. For some goods the demand is very stable; for others it is very elastic. Where the demand is stable it takes a big change in prices to force people to make any changes in the amounts consumed. On the other hand, where the demand is elastic the quantity consumed tends to fall off rapidly with increased prices or decreased supplies of money to spend. By elasticity of demand is meant its sensitiveness to changes in the price as a result of changes in the quality or the quantity of the product or in the purchasing power of the commodity. A stable demand is one which is not easily influenced by changes in these conditions. The demand for bread and for potatoes is fairly regular throughout the year, and a considerable change in price is required to make any important change in the demand, hence, the demand for these articles may be said to be inelastic, or stable. On the other hand, the demand for eggs varies greatly during the year in response to changes in the price and in the quality of the supply, hence the demand is said to be elastic. The more readily a substitute can be found the more elastic will be the demand, and the less will prices fluctuate as a result of changes in the supply. Where substitutions are easily made the quality of the product affects greatly the quantity demanded. If the first order of cabbages made by the housewife turns out to be

of poor quality she is likely to try some other vegetable the next time. In this way the poor quality of one man's products may reduce the price which another man may get for first-class goods. This illustrates what is called solidarity of interest.

The demand is steadier for established grades, that is, goods of standard qualities, than for unstandardized articles. Many people will buy a given article if they are sure of securing goods of high quality who, when in doubt, refrain from making the purchase. This places a premium upon goods of known standard of quality over what goods of the same quality would command if sold in an ungraded mixture along with goods of varying quality. Standardization is one purpose of trade-marks. The trade-mark is of high value only when it stands for an established quality that can be counted upon. The name of the farm might well be placed upon the label of the milk and cream bottles, or stamped upon the eggs, the berry boxes, the apple barrels, the grape baskets, etc. The registration of farm names for this purpose, giving the exclusive use of a given name to a given farmer, might well be made possible by legislation. This use of a trade-mark will enable the purchasers to buy with a knowledge of the character of the producer, and would result in a greater range in prices due to variations in the quality of the goods. This would put a premium on the production of goods of high quality and be an effective stimulus to good agriculture.

The individual farmer is often not in a position to incur the expense of advertising a given brand of products to such an extent as to establish a reputation beyond the limits of the local market. Community action is often essential to the establishment of brands of farm products on distant markets. Communities have succeeded in establishing brands of fruit and other perishable products. The apple growers of the Pacific northwest, the grape growers of New York, the butter and egg producers of Denmark, are conspicuous examples.

Costs and prices. It has been common to hear the statement, "The price should be high enough to pay the cost of production and a reasonable profit." This phrase when properly under-

stood is full of significance. It is a misinterpretation, however, to assume this phrase to mean that every producer of a given product has a right to expect and to demand a price which will cover his costs and give him what he considers a reasonable profit. There are many causes of variation in costs: (1) variation in natural conditions, such as soil and climate of the different areas producing a given crop, (2) variations in the abundance of labor in the different localities, (3) variation in the kinds of equipments which can be made use of, (4) variations in the distance from the market, and (5) variations in the efficiency of the farmers who give direction to the work on the different farms. As a result of the wide variations in the efficiency of the instruments of production, it usually happens that there is an inefficient producer here and there who is producing at a cost greater than the price at which other farmers find it profitable to produce enough to supply the market. If the price were artificially pushed up to a point where the inefficient farmer can make a profit, this would make the enterprise exceedingly profitable to the efficient farmers, and would tend to increase their production, the greater supply would force prices down, and the second state of the inefficient farmer would be worse than the first. Some of those who are producing at a loss might well change to some other line of production in which their qualifications count for more. It often happens, for example, that a low grade dairyman is a high grade tobacco producer, that a low grade grain farmer can make money in the grazing of cattle. Every farmer should strive to get into the field of work in which he is best able to compete.

Low efficiency of the farmer in a given line of production is only one of the causes which may result in costs which exceed prices. For example, the wheat regions of the world are numerous and widely scattered. The cost, per bushel, of producing wheat and putting it upon the world's central wheat market, Liverpool, vary greatly. During periods when the supply of wheat is increasing slowly and the demand for wheat is increasing at a slightly more rapid rate, the price of wheat will tend to remain high enough to retain the wheat industry

in the region where the costs are greatest. When, however, as a result of a new discovery or the extension of means of transportation a new and fertile wheat region enters into competition with the old regions, it may happen that the supply of wheat will increase more rapidly than the population, and to induce the people to consume more wheat per capita the price must be lowered. As a result of the fall of wheat prices some of the old wheat regions find their costs greater than the prices they can get, and will find it necessary to change to some other crop. This condition was brought about in the wheat industry when the fertile wheat regions of Kansas, Minnesota, and the Dakotas were made accessible and poured their abundant supplies of grain upon the markets of Europe. The farmers of England found wheat growing a losing enterprise. Had they understood the cause of the fall in wheat prices they would have known that the one thing to do was to drop wheat growing and take up some other line where foreign competition was not so keen. After a long time this came about, the wheat lands were converted into meadows and pastures, and the dairy industry paid well for the efforts expended. Unfortunately many farmers held to wheat production long after it ceased to yield a profit. In some cases this resulted in bankruptcy which alertness to the price situation might have avoided.

We are not without illustrations of this principle in this country. The falling wheat price due to the rapid growth of the wheat industry in the Northwest was an important factor in driving Wisconsin farmers from a system of grain farming with wheat as the money crop into the live stock industry with dairy products as the chief sources of income.

The westward movement of the wheat industry in the North was paralleled by the westward expansion of cotton production in the South. From the old centers in Georgia and the Carolinas, the cotton industry extended into the fertile "Black Prairie of Alabama," sprang up in the rich alluvial of the Mississippi and confluent rivers, and in the Black Prairie of Texas. The result was a rapid increase in the quantity of cotton produced. The increased supply was produced at a lower cost

than was possible in the old regions. The obvious result was falling prices and an unprofitable industry in the old cotton regions.

Another illustration, which is of particular interest to-day, may be drawn from the Burley tobacco situation in Kentucky. Burley tobacco was first grown in Kentucky in the northern part of the bluegrass region. This is a rough country where the soil soon lost much of its fertility. The industry gradually spread southward into the counties of Scott, Bourbon, Franklin, Woodford, Fayette, and Jessamine. These counties contain the blue limestone region known as the heart of the bluegrass country. This is a region of unusual natural fertility. A large proportion of this land had remained in bluegrass pastures from the first settlement of the country. As the tobacco industry commenced to encroach upon this fertile region the farmers found it exceedingly profitable to plow up the old pastures and plant tobacco. Under these conditions the supply of tobacco was increased enormously. Prices fell, but the farmers in the new regions of production were making large profits at prices which meant starvation to the growers of the old Burley tobacco centers. The result was the "night rider" movement in 1908, which was a strike in the dark, figuratively as well as literally. The men fighting for higher prices came from the regions of high cost of production. They failed to understand that the fundamental cause of falling prices was the fact that an increase in the supply was being produced at a reduced cost. The "night riders" forced practically all the Burley tobacco growers to omit growing tobacco in 1908 with a view to securing a high price for the 1907 tobacco crop then in the hands of the farmers. This method of limiting the supply was temporarily effective, and prices rose to a level far above that necessary to stimulate an adequate supply. The next two years brought an unusual expansion of Burley tobacco production on the rich lands of central Kentucky followed by a decline of this crop on the poorer tobacco lands in the northern edges of the tobacco region. Many look upon this episode as a victory of the farmers over the tobacco trust, and there were

unquestionably some bad practices on the part of the tobacco buyers which were improved as a result of this experience; but it was, fundamentally, a victory of economic forces over the inertia of the farmers. The economic fact of lower cost of production in a large area capable of supplying the demand forced the tobacco growers to transfer their activities from the areas of high cost to the areas of low cost.

We have dwelt at considerable length upon the economic forces which determine prices because the relative prices of products and their relative costs of production determine what the farmer should produce if he would win maximum profits as a result of his farming operations.

The cost of production is determined by a great number of things all of which will be taken up as we proceed to study the problems of farm organization with a view to securing a maximum total margin between cost and price. One thing should be remembered, however, that the same general economic principles underlie the elements of costs which underlie the prices of products. What is to the farmer cost of production is to the laborer the price paid for his service. What is cost of feed, seed, etc., is also price. What is cost of using land is the competitive price paid for the use of the land. Thus it is that value is at the bottom of all our considerations in agricultural economics, whether viewed from the standpoint of cost or price. What we are needing as farmers is to learn how to adjust ourselves to price forces in such a manner as to get the greatest satisfaction for the effort put in, consistent with national welfare, and when viewed through a series of years.

CHAPTER V

THE CHOICE OF CROPS

ALL will agree that in managing a farm one should produce the crops which pay best. The difficulty is to know which crops actually add the most to the farmer's profits. A manufacturer may decide upon some one line of production, and devote his entire time to the one thing; but most farmers find it necessary to produce a number of crops.

Suppose a farmer found one crop profitable and decided to produce nothing else, what difficulties would arise? The *risk* of depending entirely on one crop, — "putting one's eggs all in one basket," — has often been used as an argument against the single crop system. This is a point in favor of diversification which should not be lost sight of, but which should be given no more than its fair weight in the argument. If the one crop requires a very large proportion of one's time through the farming season, it may pay to specialize. If another crop cannot be introduced without cutting the area of the special crop, the question should be decided on the basis of which system will pay best in the long run. In figuring long-time average profits, soil depreciation or appreciation should always be considered and the element of risk should be covered.

One of the chief economic reasons for diversified farming is to provide profitable employment more nearly throughout the year for men and horses. Suppose a farmer should decide to produce nothing but Indian corn. The work of preparing the seed bed, planting and cultivating the crop, might keep him busy for from eight to ten weeks in the spring and early summer. The corn laid by, there would be nothing to do until corn harvest. The corn harvested, the farmer would have

another rest. From the point of view of the employment of man and horse labor, other enterprises are needed. Small grain, oats or barley, demands the farmer's energy just when he cannot be working on the corn. The oats, barley, or spring wheat is seeded very early in the spring, usually beginning about a month before the soil and air are warm enough for planting corn. The corn is then planted and cultivated several times before hay harvest. Not only does the small grain supplement the corn in providing employment, but it provides the nurse crop for seeding meadows. The harvesting of a limited amount of clover hay is supplementary to corn in its labor demands in the north central states. The clover harvest precedes the oat harvest and laps with the last half of corn cultivation, but this lapping may not reduce the amount of corn which one man may grow, because the limit on corn is set by the area one can prepare the seed bed for, plant, and cultivate the first and second time. After the corn reaches this stage, one can care for it and devote from a third to a half of his time to other work.

Corn, oats, and clover may be called *supplementary crops*, because they fit together nicely from the standpoint of demand for labor in their production. They are also supplementary in their utilization on the dairy farm, silage, clover hay, and ground oats making excellent cow feed, and the oat straw is needed for bedding.

✓ Crops which require attention at the same time of year are said to be *competitive* or *conflicting crops*. Corn, cotton, tobacco, sugar beets, and potatoes are examples of competing crops which conflict with each other in their demands for the attention of the farmer, and it happens that all these are tilled crops, and for this reason any one of them may be chosen so far as the problem of maintaining tilth is concerned. Other examples of competing crops are oats, barley, and spring wheat. These crops compete for the farmer's time and are about equally useful as nurse crops for starting meadows, hence the most profitable one should be chosen and the others dropped out of the field system.

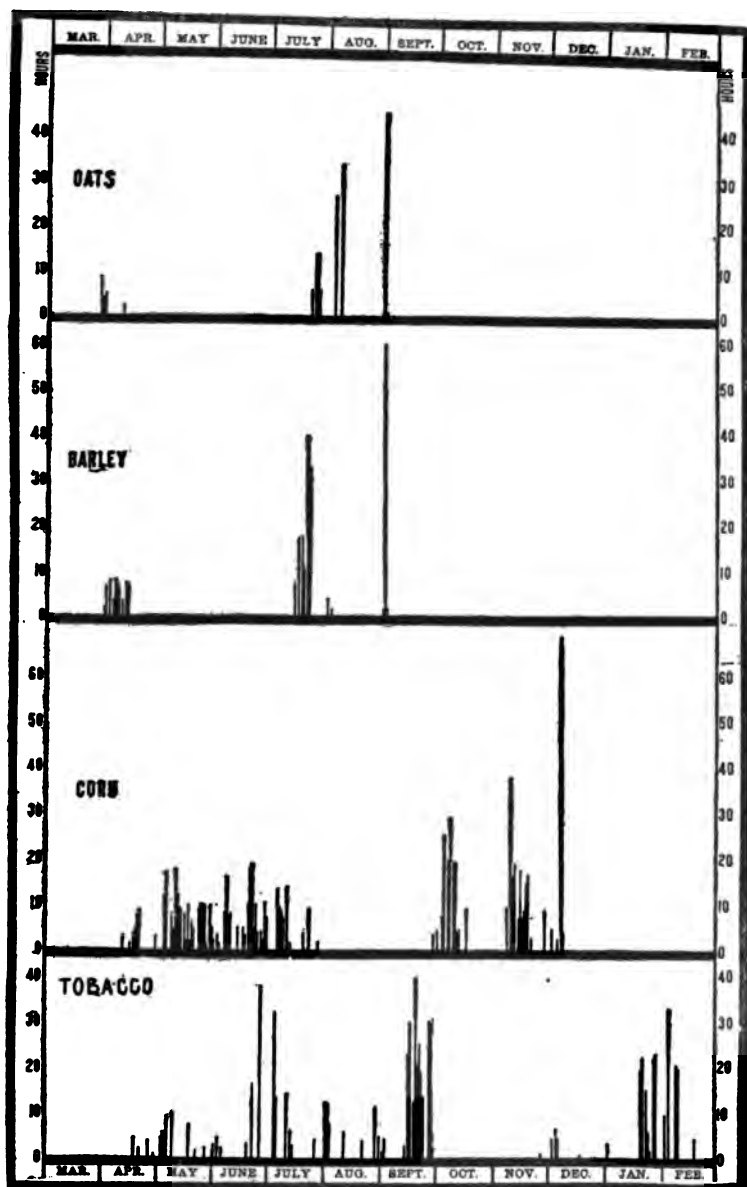


FIGURE 1. — Distribution of man labor on 10 acres of oats, 15 acres of barley, 30 acres of corn, and 4 acres of tobacco on a farm near Madison, Wisconsin, in 1910.

Should one grow the crop which yields the greatest value per acre? Not necessarily, for the crop which sells for the most may have cost very much more, and the net proceeds might be relatively small. *Should one select the crop which yields the maximum net profit per acre?* There are circumstances where this would be a safe rule, but as a general principle this standard fails. Crops which require essentially the same amount of labor and the same kind of equipment may be compared on this basis. For example, oats and barley lend themselves to this basis of comparison without great danger of mistakes. In case of tobacco and Indian corn this would not, however, be a safe basis for comparing relative profitability for the reason that the tobacco requires much more labor per acre than does the corn, and one man can grow three or four times as many acres of corn as of tobacco.

Profit per hour of man labor has been suggested as a basis of comparison where one crop requires much more labor than another. Where the two crops conflict at all stages and require the same class of labor, this may serve as a fair basis of comparison; but where a large amount of labor is demanded on the one crop at a time of year when there is no demand for labor on the other crop, a serious difficulty in comparing profits is introduced. For example, tobacco and corn may conflict throughout the growing and harvesting season, but the corn may provide more labor in the winter, utilizing the silage in the dairy, at a time when no other profitable employment could be found. Under these circumstances corn might add more to the farmer's profit than tobacco, even though tobacco yielded a higher return per hour on the average than corn. For example, assume, that after paying all expenses, excepting for labor, the net return left as pay for labor and managerial activity was 40 cents per hour for labor on corn and its utilization in the dairy, and 50 cents per hour for labor on tobacco; but that the two crops were competitive during only 60 per cent of the labor hours put upon corn and cows. Let us suppose, however, that during the remaining 40 per cent of the time the work at which the tobacco man could be employed yielded only 15 cents per

hour. In this case, for each hundred hours the corn dairyman received \$40, whereas the tobacco man received \$30 plus \$6, or \$36 for tobacco and supplementary work.

It has been suggested that *profit per acre multiplied by the number of acres a man can operate* may be a better method of comparing the relative profitableness of competing crops than profits per hour. This method would seem to possess all the merit of the other methods mentioned, but is not without the objection that whereas corn, for example, may be put in the silo and made the basis of winter employment in the dairy, no such farm enterprise rests upon tobacco. Furthermore, tobacco usually conflicts not only with corn but with small grains. Tobacco lends itself to a single crop system. For this reason it becomes necessary to compare the profits from tobacco plus whatever may be combined with this single crop, with corn, oats, and hay, plus the live stock industry which is based upon these crops. In this case the effect upon the land should be carefully considered.

Where two crops conflict and the increase of the one requires the decrease of the other, the various rules may be used to aid in passing judgment, but in the final analysis all cases come to this: *Everything considered, choose from each group of competing crops the one which will add most to the farmer's total net profit, and combine as many non-competing crops as will add enough to the total profits of the farm to make it worth his time to produce this crop rather than use the time for self-improvement or the enjoyment of life.*

When this principle of crop selection is followed, *it will not be true, necessarily, that each crop will be grown where the facilities for its production are the greatest*; for it may happen, for example, that in the region where the facilities for the production of sugar beets are best, tobacco or some other competing crop will enable the farmer to win a larger net profit, in which case the sugar beet might well be excluded from the system of crop rotation in the very region where the natural conditions for its production are best.

It is by knowing relative prices that the farmers, who know

roughly relative costs, are able to choose wisely from a given group of competing crops. These prices are the resultant of the forces lying behind demand and supply. Assuming a demand, the supply of a given commodity is influenced by the extent of the area available for its production within the territory competing on the same markets. In the case of the great staples the market is world-wide. Hence a knowledge of the agricultural geography of the world is essential to a well-balanced judgment on the question of probable price relations.

Let us compare the four competing crops, — cotton, Indian corn, sugar beets, and potatoes, — with regard to the extent of territory available. The areas available for corn and cotton overlap, but the area available for cotton culture is more limited than the area available for growing Indian corn. If cotton were to be excluded wherever Indian corn can be grown, the cotton supply would be very small, whereas corn can be produced in enormous quantities outside of the potential cotton regions. The result is that the relative prices of cotton and corn tend to be such that cotton will pay better than corn on the best cotton lands and the extent of the area planted to cotton and the extent to which cotton will drive corn out of their common territory will depend upon the relative demand for these two products. History shows that corn has not found a place on the best cotton land of the South as a commercial crop. It may pay to grow corn for home use in the cotton belt, and not pay to grow it to sell or for commercial hog or cattle production. Again, a small amount of corn may be grown on a cotton farm without limiting the cotton area which one family can handle. This is because a family can grow more cotton than it can pick, and a small amount of corn may be supplementary to cotton. It is this commercial demand for cotton and the fact that cotton conflicts with the commercial growing of all other crops that has had much to do in forcing upon the South the one crop system with all its disadvantages of probable soil depletion and the risk of crop failure of price depression. Whenever cotton prices have been low, some planters have given more attention to other crops. This has limited the supply of cotton and re-

sulted in higher prices, then cotton has again paid best and continued to be king in the South.

Indian corn and sugar beets have wide areas of common territory so far as the physical and biological conditions of plant growth are concerned. It happens, however, that sugar beets thrive in northwestern Europe and in the western part of the United States where climatic conditions do not favor the culture of Indian corn. In other words, the area suited to Indian corn is much more limited than the area suited to sugar beets. The normal economic result is that corn prices are high enough to enable this crop to crowd sugar beets out of the system of farming throughout the areas best suited to Indian corn. The opportunities for producing sugar beets are so great outside of the corn belt as to yield a supply great enough to keep sugar prices too low to enable sugar beets to encroach very far over the margin of the potential corn area.

Potatoes can be grown more widely than corn or sugar beets. Potatoes thrive on sandy soils which are less valuable for the production of corn and sugar beets. The result is that commercial potato growing is found most largely on light lands outside of the corn belt, although for local consumption they are produced throughout the corn belt.

The general truth is that where two competing crops which are in general demand can be grown on the same land, prices will tend to be such that the one with the more limited potential area will have its choice of territory and its area will expand in the direction of the less and less favorable conditions for its production until rising costs and lowering prices, due to increased production, will make it unable to extend farther, owing to greater profits secured from the competing crop. As a result of price variations, there will ever be more or less uncertainty in the zones where the differences in profits are never great. In other regions, where the advantage of some one crop is great, the system of cropping becomes definitely established.

Distance from market has long been recognized as an important factor in determining what should be produced on a given farm. As one rides from a large city into the country,

one will usually find the market garden district just beyond the outlying plotted area held speculatively for city lots. Next beyond this, and often more or less intermingled with the gardens area at first, are found farms devoted to the production of city milk, beyond this may be found the butter industry, the cheese industry, beef or pork production or grain farming, depending upon the location of the city.

This division of territory among the various types of farming or lines of production is the result of relative farm prices of the different products. This difference in farm prices is due to two factors, namely, the perishability and the quantity produced per acre of the products. Perishable products must be produced near enough to the market or under such favorable conditions of transportation that the commodity can be put on the market in good condition. Other things being equal, the greater the quantity produced on a given area, the lower will be the price per pound, and the closer to the market it should be produced. It is usually a combination of these two factors that puts market gardens near the markets, and puts sheep and wheat farms at a distance from the market.

Can the farmer work out the most profitable system of crops for his farm once for all, so that he need give this matter no further attention? Unfortunately the economic problems of farm management are never permanently solved. Changes in relative prices of competing crops often make it necessary to change from the one to the other. This change in relative prices may result from the growth of a near-by city, such as to increase the demand for bulky and perishable products. The increased demand results in increased prices, which enables these crops to crowd out their competitors in a larger and larger territory surrounding the city. The farmer should, however, be very conservative in changing, once he has a profitable system established. Changes are expensive. They involve learning new things, buying new equipment, and meeting new problems of crop conflict, etc. One should not let temporary price fluctuations move him to change his plans. But he should not be too conservative; if changes in prices result from

permanently changed conditions, the system of farming should be quickly adjusted.

The *change in relative prices* may result from a change in the number of uses to which a staple crop like cotton or corn is put, or it may result from an expansion of the area available for the one crop without a like expansion of the area available for the other. The expansion of cotton production in Brazil or west central Asia or India might reduce the price of cotton relatively to that of corn so that corn would replace cotton on the margin of the cotton belt of the United States. It will be noted that the stability of the system will be greater in the heart of the corn belt and in the heart of the cotton belt than on the margin between these two regions.

Fluctuations in the rent of land without any change in the relative values of the products may necessitate a change in crops. Suppose, for example, that the rent of a given piece of land is three dollars per acre, and that the net profit per acre is five dollars when the land is devoted to corn, and that the net profit is twenty dollars per acre when the land is devoted to sugar beets; but that the farmer can operate thirty-five acres of corn and only seven acres of beets. Then he could win one hundred and seventy-five dollars net profit by producing corn, and only one hundred and forty dollars by producing beets. But, suppose the rent of the land should rise to five dollars per acre, without any change in the prices of the products or in the costs of production. The profits per acre of corn would then be three dollars, and that of an acre of beets would be eighteen dollars, so that with the same acreage of these two crops, the total net profit which he could win from the production of corn would be reduced to one hundred and five dollars, while that from the beets would have been reduced to one hundred and twenty-six dollars only. In this hypothetical case, the rise in the rent would result in a subtraction of only fourteen dollars from the total profits of the beet crop, while it would result in a reduction of the profits on corn of seventy dollars, so that the crop which was the more profitable before the rise in the rent would become the less profitable as a result of the rise in rent.

Changes in farm labor conditions may affect the choice of farm enterprises. An unusual demand for laborers in the city, or the withdrawal of men from the farm to go into the army, may so change the condition in a given community that it becomes necessary to select crops which require much less labor. This might easily result in a change from an intensive crop like tobacco or sugar beets, which require very much labor per acre, to a more extensive crop like corn, which requires much less labor per acre. On the other hand, a farmer with a growing family may find it desirable, as his children become old enough to help, to introduce sugar beets or some other intensive crop on his farm in order to give employment to the members of his family.

The amount of available capital may influence the farmer in the choice of crops. If he has little capital with which to buy dairy cows, he may for this reason produce grain to sell instead of producing feed for dairy cows, which might be the more profitable if he had the capital with which to go into the dairy business.

The characteristics of the farmer, his likes and dislikes, his previous training and special skill in particular lines of production, may very greatly affect his choice of enterprises. That which is profitable for one farmer to produce in a given community may not be profitable to another because of the fact that the second farmer may lack the skill required in carrying out that line of production.

It is a well-recognized fact that the different crops make different demands upon the soil. For this reason, the crops which are associated together in the systems of rotation should be such as will make supplementary demands upon the soil's elements of fertility. This in itself, however, is not a safe guide in determining which plants should be introduced into the field system; for it might lead to the cultivation of the less profitable of two competing crops, and thus reduce the farmer's total net profit. Yet it should ever be kept in mind that if one of two competing crops exhausts the soil while the other adds to its fertility, this fact must be taken into account when

calculating the *net* profit which these crops can be made to yield. The crops being chosen which will, one year with another, enable the farmer to win the largest net profit, they should be arranged in the field system in such a manner as best to supplement each other in their demands upon the soil.

It has been the purpose of this chapter to outline the thinking which the farmer needs to do in order to keep his system of cropping adjusted to the conditions of the market in such a manner as to yield maximum results. There are other reasons for studying market conditions, but this chapter emphasizes one most important occasion for keeping posted on market prices. Much has been said in recent years about farmers controlling their products in order to secure fair prices. Without going into the question of organized control, attention is here called to the fact that if every farmer will produce the crops which pay best on his farm, this in itself will "cut out the losses and let the profits run on," and may be a more feasible plan than attempting to have prices artificially raised because a given farmer is producing at a loss.

CHAPTER VI

ECONOMICS OF THE LIVE STOCK INDUSTRY

THERE are certain crops such as cotton, tobacco, and flax which are always intended for the market in their native form; there are many other crops, such as the grains and the hay and forage crops, which may be sold in their native form or transformed by the farmer into animal products; and there are many other products of the farm, such as soft corn, corn fodder, second growth on grain fields and meadows and the grass growing on land not suited for tillage or hay crops, which are not salable in their original form, but which may be converted into valuable products by means of live stock.

No question arises regarding the utilization of the first and the third of these three classes of products, but in case of the second class the farmer has ever before him the problem of determining whether the largest, long-time average net profit can be obtained by selling or by feeding these crops. The proper solution of this question is determined by the relative prices of the crops and the live stock products.

One factor ever to be kept in mind in counting the profits of the live stock industry is the *value*, as *fertilizer*, of the manure, which is a very important by-product of this industry. This element is usually underestimated in a new country, but in the older countries, where commercial fertilizers have long been necessary if the farmer would secure the largest net profit in the production of field crops, full value must be given to this by-product.

Charles F. Curtiss, of the Iowa Agricultural College, says:¹ "Maintenance of fertility is secured by rotation of crops, by

¹ From a paper entitled "Economic Functions of Live Stock," read before the Economic Section of the A. A. A. S., St. Louis, December, 1903.

chemical fertilizers, and by physical and bacteriological methods ; but by none of these has the virgin strength of the soil been maintained over long periods except as plant production has been associated with animal husbandry. By selling dairy products in the form of butter and cheese, and restoring the by-products by feeding the skim milk, buttermilk, and whey, we take from the soil but one-tenth of the fertility lost by a grain crop. . . . If fertilizing material must be bought for the farm, it can, under all ordinary conditions, be bought in vastly cheaper form as feedstuffs and utilized as such, and the residue applied to the soil, than by purchasing fertilizers outright. The very best of fertilizers are often obtained in this way without any direct outlay. The use of feedstuffs, rich in fertility, may even return a handsome profit as a separate proposition, and thus fertilizing constituents come on to the farm under most advantageous circumstances. The British and other European farmers buy large quantities of our flaxseed and corn by-products. They figure that they are the gainers, even if they do not make any profit on their feeding operations with these products, and they are. Until recently the packing-house by-products, including dried blood and tankage in various forms, have practically all gone direct to the land as fertilizers. To-day these products are serving a most important purpose as feedstuffs, and the time is near at hand when practically every pound of this material will first be utilized as stock food, and later returned to the soil. The returns are so much greater and so much more economical in this way as to put the purely commercial fertilizer farmer out of business in the space of a few years at the outside, where other conditions are similar."

The feeding of grain, hay, and fodder to live stock is an effective means of converting these crops into products of higher specific value, which will better stand the costs of transportation to distant markets. "Cattle and hogs not only convert, but also condense, Indian corn (maize). They enable it to be raised profitably in regions too far removed from the markets of the country to be transported in that form. By condensing the

corn to one-fifth or one-sixth of its bulk and weight, and reducing the cost of transportation in something like a similar proportion, the possibility is secured of raising corn in regions situated thousands of miles from the market at which the corn products, or, what is practically the same, the pork and beef, are consumed."

Indian corn is largely consumed on the farms where it is produced. Four out of five of the corn producers of the United States feed their entire crop. From 80 to 82 per cent of the corn is consumed on the farms where produced, and much of that sold is consumed on other farms. About one-fourth of the oats is sold from the farms where grown, and nearly nine-tenths of the hay and coarse food is consumed on the farms where grown. The percentages of these crops sold varies greatly in the different parts of the country. Illinois leads in the sale of both oats and corn. The relative importance of Illinois as a region from which feedable crops are sold is shown in the Thirteenth Census, Vol. V, map before page 561, which shows the receipts from sales of feedable crops in 1909. Twenty-one counties in east central Illinois show receipts from feedable crops representing 46.7 per cent of the total value of all cereals produced. Corn and oats are the principal crops produced in this region. There is no other region in the United States where feedable crops are so largely sold. In the state of Iowa, Illinois's closest competitor as a corn and oat state, the value of feedable crops sold represents 25 per cent of the value of all cereals produced.

There are several reasons for this difference in the type of farming in central Illinois and the remainder of the corn-oats belt, but distance from the market is certainly a very important factor. Chicago is the greatest corn market in the United States, and Milwaukee and Peoria rank high among the minor markets.

The following table shows the prominence of Chicago as a market for both corn and oats for the year 1914. It will be seen that the receipts at Chicago were three and one half times that of Omaha, the closest competitor.

TABLE I
RECEIPTS OF CORN AND OATS AT THE PRIMARY MARKETS FOR THE
YEAR 1914

	CORN (bu.)	OATS (bu.)
Chicago	106,600,000	138,400,000
Minneapolis	12,260,000	22,215,000
St. Louis	17,106,000	24,945,000
Milwaukee	18,338,000	26,792,000
Kansas City	23,173,000	9,258,000
Omaha	30,005,000	16,951,000
Peoria	14,520,000	12,926,000
Toledo	4,310,000	3,586,000
Detroit	3,349,000	3,998,000
Cincinnati	8,468,000	5,958,000

Nearly all of the corn and oats shipped into Chicago arrives over the railways extending west and southwest from Chicago, whereas practically all these grains shipped from Chicago go over eastern railways or by lake. This implies that the demand is in Chicago and east of Chicago, hence the advantage of this central Illinois area as one in which to grow corn and oats for the market.

So far as the writer has been able to ascertain, the freight rate per hundred pounds of hogs in carload lots from the various Iowa and Illinois railway stations to Chicago is about twice that for corn in carload lots from the same stations. It appears, also, that the rates for these commodities are, on the average, about twice as high from the Iowa as from the Illinois stations. On the assumption that the feeding of the corn to hogs and cattle condenses the product to one-sixth of its original weight, there would be a saving of two-thirds the freight by sending the condensed product. But the saving would be twice as great for the Iowa farmers as for the Illinois farmers, and as the price of corn rises, the point where it would be more profitable to ship than to convert it into live stock products would be reached in Illinois before it would be reached in Iowa.

In comparing the relative profitableness of crops and live stock, especial attention should be given to the alternative opportunities for the employment of labor and to the extent to which crops and live stock compete with each other in their demands for labor.

The live stock industry comes into competition to some extent with the production of field crops. The farmer who feeds and properly looks after hogs, cattle, or sheep may not be able to spend as much time in the field as he who keeps no stock of these kinds. The dairy industry comes more into competition with the crops of the fields than do the other live stock industries. But while a part of the time devoted to live stock must be subtracted from the time which can be spent in the field, yet, for the most part, the live stock industry is supplementary, in its demands for labor, to the other branches of farming. Live stock requires the especial attention of the farmer in the winter when nothing can be done in the fields. In the summer, when the farmer is busy in the field, much of the live stock is shifting for itself in the pasture, and there is usually enough time when the ground is too wet for work in the field, to permit the farmer to give the needed attention to the live stock which is in the pasture.

To the extent that the live stock industry is supplementary, in its demands upon the time and energy of the farmer, to the production of farm crops, he has only to decide whether the additions to his total net profit resulting from the transformation of the various crops into animal products, are sufficient to remunerate him for the extra efforts put forth. But to the extent that the live stock industry encroaches upon the time and energy available for crop production, the problem of determining whether to sell his crops or convert them into animal products presents itself in practically the same form as that of selecting crops for the field system. The general principle is simple, "Seek the largest, long-time average net profit," but the practical application of this principle is especially difficult, because of the limited extent to which these two lines of work come into conflict with each other. It can be said, however,

that the live stock industry should enable the farmer to win as large a long-time average net profit as he could secure from other sources, and enough more to make worth while the extra effort put forth when he could have found employment in no more productive line of activity, but which time might have been spent in enjoying the products of his labor or in improving his mind. One thing to consider in this calculation is that the crops are usually much larger on stock farms than on grain farms of equal natural fertility.

Whether a given farmer should keep cattle, hogs, or sheep, or a combination of these, is determined by the kind of feed at his disposal, the relative prices he can secure for the different classes of live stock products, and in some measure upon his personal likes and dislikes. The corn belt is preëminently the hog belt, and the region for finishing beef cattle. The northern edge of the corn belt is the principal dairy region, partly because of the demands made by cities for whole milk; partly because the corn is in danger of being damaged by frost and can be more safely handled through the silo.

In the heart of the corn belt the farmer finds it profitable to put a full day in the cornfield. The labor demands made by hogs and beef cattle are almost negligible during the time of year when corn is demanding attention, whereas the dairy makes a heavy drain on the farmer's time throughout the summer, and hence the cow is relatively a stronger competitor in the region where corn is a less profitable crop than in the heart of the corn belt.

Cows have replaced sheep in Vermont, New York, north-eastern Ohio, and southern Wisconsin. Wool production has found its way to the Rocky Mountains. The high specific value of wool enables this grazing industry to thrive on rough lands at great distances from the market, hence it gives place to perishable products or products of lower specific value near the markets and on lands suited to field crops. World-wide competition has been an important factor in keeping the price of wool low, and in discouraging wool production in most parts of the United States. During the world war, conditions were

temporarily changed and the high price of wool stimulated the sheep industry.

Horse breeding is an important industry throughout the corn belt and the grazing areas of Missouri and Kentucky. Horses are required for growing corn, but are required to work hard only a few months in the year. By combining horse raising and corn growing, the horse labor cost in corn production is greatly reduced. Even in the central Illinois corn area, where hogs and cattle have practically disappeared, the rearing of colts is an important industry, based in part upon the great amount of unsalable roughage available on the corn-oats farm.

The individuals of any class of live stock are so varied that one may have difficulty in deciding which breed or which quality to keep. "The best are most profitable" is a saying which helps little. The problem is to know which will pay best. What is best in dairy cows for one locality may not be the best in another. The cow which is best for a careful, intelligent dairyman may be poorest for a careless, ignorant man who keeps cows. This is true primarily because the superior cows cost more money, and while they are worth more to the superior dairyman, they are worth no more to the man on whose farm all stock soon come to look like scrubs.

Some cattle are excellent for beef production and of little use as dairy animals. Other breeds of cattle are efficient producers of milk, but their carcasses have little value as human food. Intermediate between these extremes are found a few breeds such as the Holstein, the Ayrshire, and the Brown Swiss which are excellent dairy animals and produce excellent veal calves, while the defective cows yield large quantities of fairly good beef. The relative merits of these three classes of cattle depend upon the circumstances. On inferior grazing lands, where the herd must lead a migratory life during the summer, and where labor is dear and land cheap, the specialized beef type usually proves most profitable, but such animals are not suited to a city milk district, where the price of the carcass of a dairy cow is not to be ignored, but where the primary consideration is a large flow of milk of acceptable quality.

The choice between the extreme dairy type and the cow which produces both milk and meat should depend upon the price of meat. In a country where great quantities of high-class beef are produced at low cost, there is more economic reason for the highly specialized dairy cow than in a country where beef of any kind is high. In other words, the right choice of breeds depends upon economic conditions which are ever changing. Conditions in America have in the past encouraged highly specialized beef cattle and highly specialized dairy cattle. It does not follow that this will be true in the future.

CHAPTER VII

MISCELLANEOUS WORK CORRELATED WITH CROP AND LIVE STOCK ENTERPRISES

THERE are many odd jobs on every farm which are here classed as miscellaneous work because they are not connected directly with any of the important crop or live stock enterprises. For example, the repairing of old fences, the building of new fences, the cutting of weeds along fences and ditches, the filling of washes, the repair of buildings, making concrete walks, trimming trees about the house, making posts, cutting stove wood, improving roads about the farm, etc., may be classed as miscellaneous work.

This class of work has sometimes been called unproductive. This characterization arises out of the fact that even though all this work be done perfectly, the farm will yield no income without the crop or live stock enterprises. Yet the crop and live stock enterprises cannot long be carried on if all this miscellaneous work is neglected. It is better, therefore, to call this labor *indirectly productive* rather than unproductive.

One of the most important problems in farm management is to keep the indirectly productive labor out of the way of the directly productive labor and yet get it done. Just to the extent that crop work must be stopped in order to make or repair a fence, the possibilities of profits are reduced. The purpose of this chapter is to make some suggestions which may be helpful in organizing the farm work in a manner that will tend to keep the proportion of time on directly productive labor at a maximum and arrange to get the miscellaneous work done when no directly productive labor can be carried on.

The experienced farmer usually anticipates his need for fuel during seasons when crop work demands his attention, by pro-

viding a large pile of wood, ready for the cook stove, before the frost is out of the ground in the spring. He likewise anticipates his need for fences and utilizes the time after the frost is out of the ground until work can commence in the field, building and repairing fences. Not only is this time relatively free from conflicting enterprises, but there is no other time of year when a post can be set with so little labor as in the loose, moist soil as it is found just after the frost is out of the ground. The shiftless farmer who neglects this opportunity and comes to the date when the cattle should be turned into the pasture without having the fences in repair may have to take a man and team out of the cornfield a day at a time when labor on corn is worth 75 cents an hour, to do work which might have been done when alternative opportunities would pay no more than 10 cents an hour.

Instances might be multiplied without end showing how the neglect of miscellaneous work when time is available results in great loss to the farmer. To facilitate getting work done at the most opportune time the following classifications of work have been made:

- (A) (1) Work which must be done at a definite time.
 - (2) Work which may be done any time within a wide latitude.
 - (3) Work which is often postponed indefinitely.
- (B) (1) Work that can be done when it is raining.
 - (2) Work which cannot be done while rain is falling, but can be done while the ground is wet.
 - (3) Work requiring dry weather and land dry enough to work or drive over (hauling manure, lime, etc.).
- (C) (1) Work which cannot be done while ground is frozen.
 - (2) Work which can be done while ground is frozen.
 - (3) Work which can be done when ground is covered with snow.

A. (1) Feeding and milking dairy cows, sowing oats, planting corn, the cultivation of corn, and the harvesting of the oats, are examples of work which will suffer if not done at the right time. The farmer who neglects his cows will soon have no milking to do. The farmer who delays sowing oats until the

warm, dry days of early summer finds his harvest light, and he who delays the cultivation of his corn for one week after it is large enough to plow will have a weedy field and a poor crop. Success in farming demands that all other classes of work be kept out of the way of work which by nature must be done at a definite time to secure best results. This class of work is often called rush work, not because it should be done poorly, but because the profits of the farm depend upon the doing a maximum of this work and doing it well. In rush seasons one should work the maximum day, expecting to relax when the rush is over, but when this class of work demands attention one should "*do nothing to-day which can as well be put off until to-morrow,*" in order to devote a maximum of effort to the rush work.

(2) Work which may be done any time within a wide latitude requires the very especial attention of the farmer, because the time comes when this work cannot be put off longer and it may crowd the labor which can be done only at a definite time. For example, seed corn may be tested and shelled at any time after it is thoroughly cured, but if neglected until the fields are ready to plant, this most profitable work of the farm may be delayed. It takes a better manager to perform all these tasks in seasons when there is no rush work than it does to concentrate on rush work, for the season calls the farmer to the task which must keep pace with nature, while it is only the power of the mind which takes thought of future needs and anticipates these wants by making the needed preparation. The rule to follow when there is no rush work pressing for immediate attention and which must be enforced with methodical and industrious habits if the farmer is to rank high as a manager is found in the old phrase "*Put off nothing until to-morrow which can be done to-day,*" in order to be free to devote a maximum of time to the rush work when it comes.

(3) There is much work which should be done in order to keep the farm looking tidy and to make life on the farm more livable which is often left undone indefinitely. Many a farmer has neglected beautifying his lawn because it is not connected

in a vital way with the money profits of the farming operations. In considering work of this class careful attention should be given to the fact that the farm is capable of providing for the direct satisfaction of many wants without the intervention of money, and that the importance of these wants should be compared with those to be satisfied by the expenditure of money, before deciding to neglect these direct satisfactions to earn more cash profits. Many of these wants can be satisfied, however, without reducing the cash income, by planning the work more carefully.

B. (1) The second classification is based upon weather and soil conditions with respect to humidity. There is a great variety of tasks which can be done under shelter and which should as nearly as possible be cared for on rainy days. Shelling seed corn, mending the harness, and repairing tools are typical examples. It is necessary to have some device to assist one in thinking of these tasks when the rainy day arrives or one will let these golden opportunities slip unimproved. The writer knows a farmer who keeps a notebook in his pocket in which he jots down the tasks which can be performed on a rainy day. He calls this his rainy day book. This enables him quickly to plan the work for a rainy day when it comes, and to choose the tasks with attention to the date prior to which they must be performed or come in conflict with rush work. The rule is to push rainy day work when it is raining, and to do no rainy day work when it is not raining, if there is "outside" work to be done.

(2) There is a large class of tasks which may be called "wet land work." In this class falls the cutting of weeds in the fence rows, the repairing of fences, the cleaning up of the wood lot, the repair of buildings, the laying of concrete walks, the digging of trenches for laying water pipes from the well to the house and to the barn, and a score of other tasks which will crowd themselves upon the farmer's mind as he considers the things he wants done. The rule is to push the wet land work when the land is not dry enough to work and do no work of this class when there is field work which can be done.

(3) The work which requires dry land and dry weather comprehends the greater number of field operations which must be performed at a definite time, hence the importance of keeping this time free for these activities. The percentage of time capable of being used in the field which is actually used for this purpose is a measure of one's ability as a manager.

C. The third classification is based upon the condition of the ground with respect to frost and snow.

(1) The work which cannot be done while the ground is frozen comprehends a large share of the field operations. Some of the activities which one is in danger of postponing too long and for this reason suffer loss are potato digging, beet lifting, and fall plowing. Every farmer should be informed as to the time of year the ground usually freezes sufficiently to stop these lines of work and bend every effort to having all work of this nature out of the way before that date. The fact that the permanent freeze is some years much later than the ordinary, should not be used as a reason for delay. The good manager keeps step with nature, but tries to keep considerably ahead of the date when a given task cannot be performed. The early dates when the ground has frozen enough to stop plowing should be held in mind rather than the later dates. The general rule in autumn is "work which cannot be done when the ground is frozen should take precedence over work which can be done later." Fall plowing should be looked after first and corn husking afterwards because the husking can be done when the ground is frozen and the plowing cannot.

(2) In the corn belt, the husking of corn stands out as an important task which is performed when the ground is frozen but which should be completed before a heavy snow falls. It is the fear of snow and severely cold weather that impels the corn farmer to bend every energy to clear the field of corn before the first of December, or some other date fixed by the experience of the community as the time when there is danger of weather which will stop the work.

(3) There are many tasks which can be done in winter and while the ground is covered with snow. Examples are: hauling

manure, spreading lime, hauling and preparing stove wood, hauling and storing ice, visiting the herds of successful farmers, attending the farmers' course, reading books on the culture of crops, on the breeding, care, and feeding of live stock, and on the best methods of marketing farm produce. This is the time of year for the farmer to work a short day and take time for self-improvement.

CHAPTER VIII

WHAT SHOULD THE NATION PRODUCE?

FROM the standpoint of the farmer, the guiding principle in the organization of a farm is to seek the largest net profit; but there is another point of view than that of the farmer, and that is the point of view of the statesman. Since not only the farmer, but every one else, is interested in agriculture, the question arises, are the interests of the country as a whole best conserved when each farmer follows tenaciously his own self-interest and succeeds in gaining the largest net profits in return for the effort which he expends in agricultural production? There may be, at certain points, a conflict between the narrower and the broader interests. In this case we are confronted with the problem of determining whether the individual or the general interest should be promoted. To the extent that the greatest good to the greatest number demands that the general or social interests be served, it falls within the domain of our subject to propose laws which will limit the free action of individuals in such a manner as to promote the highest interests of society as a whole.

But while human welfare or the greatest good to the greatest number has long been recognized as the standard by which every law or custom should be accepted or rejected, this principle is so abstract that men may be fully agreed upon its acceptance as their standard, and yet hold exactly opposite opinions as to the desirability of a particular measure. The statesman needs a more concrete standard which may be used with safety in his efforts to set proper limits to the free action of farmers and of those with whom they have economic relations, in the pursuance of their daily toils.

Should the maximum in quantity of farm products be the goal of the agricultural statesman? The phrase, "More food

this year is patriotism " has at times been interpreted in a way which suggests that some leaders in the promotion of agriculture would make quantity of product the goal in view. If quantity of product in pounds or bushels were the goal in production, the agriculture of this country would be very different. We would produce more potatoes and other bulky crops, only to find the demands of the consumers too small for the supply of these articles, and a part of the supply wasted.

Human desire is the starting point in economic considerations, and human welfare is the end in view in economic legislation. To the extent that human desires are wholesome, values may be made the basis of determining what a nation should produce, for human desires reflect themselves in values. *The highest value of the productions of a country has, therefore, been set forth as a practical economic ideal for the statesman.* It has been said that "the prosperity of a nation is in proportion to the value of its productions."¹ This is the economic ideal which was set forth by their leaders as the aim and the end of the Patrons of Husbandry in their efforts to promote the interests of agriculture.

To this principle, as an economic ideal, it may be objected that legislation may be of such a character as to increase the value of the farm products of a country and at the same time not improve the economic well-being of the people of the country as a whole. It is quite conceivable, for example, that duties on imports may be so levied as to increase the total value of the farm products of a country without increasing the prosperity of the nation.

It is necessary, in order that this national ideal shall be attained, that the labor and capital of a country be properly distributed among the various lines of economic activity. The labor and the capital of a nation should be so distributed among the various industries that the portion of these factors which is employed under the most unfavorable circumstances shall be equally productive, socially considered, in all industries. The necessity of this proper adjustment of the productive

¹ See the preamble of the Constitution of the Patrons of Husbandry.

forces should ever be kept in mind in the discussion of the movements of population from country to city, or vice versa.

When the *productive forces are properly distributed* among the various lines of production, and where the relative values of products are not to be directly affected by public action, it would seem that a just and practical ideal to be held in mind by the statesman when passing judgment upon what crops should be grown, the management of live stock, the intensity of culture, the size of farms, and the laws which limit and define farmers' rights in their relations to each other, to their landlords, to laborers which they employ, and to those to whom they sell their products, would be the *highest long-time average value of the farm products of the country as a whole*.

We wish to mark out clearly the distinction between the social ideal and the ideal of the individual. The individual seeks the largest net profits. He desires to have that share of the product which is left to him, after paying what is necessary to engage the other factors of production, as large as possible. Where the personal interest of the farmer does not extend to all of the factors of production, conflicting interests are certain to arise, as between the landlord and the tenant, or the employer and the employee. While the farmer is interested, personally, in having his own share of the produce large in proportion to the efforts which he puts forth, the statesman should be interested equally in having the returns to all the factors of production as large as possible.

The conflict between the national point of view and that of the farm operator may relate to the choice of crops, the intensity of culture, the character of the live stock industry, the control of weeds, the control of disease, the quality of the products sold, and the conservation of the land and the economic and social welfare of all classes. When viewed from the national standpoint, it is not the return to any one factor in particular, but the sum of the returns to all the factors which should be of vital interest to the statesman. *With the limitations which have been suggested, the highest long-time average value of the total product of the agricultural industry may be looked upon as the goal, when agriculture*

is viewed from the standpoint of maximum efficiency in production for the nation as a whole.

But maximum efficiency in production may not be the sole aim of a nation. National defense may seem at times to be so important as to make it desirable to reduce the efficiency of production in order that the nation be self-sufficing to an adequate degree. This may be the most profitable thing to do with a view to meeting the national needs in times of international strife when international commerce is extremely hazardous.

The problem then becomes that of ascertaining to what extent a nation should produce everything it needs as nearly as possible and to what extent it should produce those articles which enable it to secure the maximum free competitive values and depend upon international trade to provide the great variety of articles which can, in times of peace, be secured from abroad more cheaply than they can be produced at home. The answer to this question depends upon the national ideal and the progress of civilization in the direction of protecting international trade.

To the extent that civilized nations desire to live in peace with one another, making mutual concessions from time to time and recognizing one another's rights and the mutual benefits to be derived from the exchange of commodities, advantage may be taken of the benefits of division of labor among nations and the resulting international commerce. On the other hand, if strong nations are unwilling to enter this world comity, and insist on extreme nationalism and stand ready to encroach upon the rights of others upon land and upon sea, it may become necessary to adopt an economic policy very different from the one which would be most productive if a world economy were practicable.

Under the system of extreme national economy, where the nation must be self-sufficing in the primary necessities of life, industry, and war, many of the advantages of modern civilization may be lost. Luxuries may be secured from abroad in times of peace and dispensed with in times of war. A national

system may not only point to the production within the nation of the entire supply of the necessities of life and the munitions of war, but *may result in an agricultural policy which looks to the production of a large number of effective soldiers rather than a maximum of agricultural products.* In this way the size of farms, the tenure of land, and the credit system may all be modified with a view to maintaining a very much larger number of farm families than would otherwise exist.

The larger the country and the greater the diversity of soil and climate found within her borders, the smaller will be the economic loss in adopting a national system of agriculture. For this reason the United States would be in a strong position compared with other nations under the necessity of a self-sufficing national economy. Yet the United States may well afford to spend millions annually in maintaining friendly international relations rather than undertake to live an isolated economic life.

A study of the exports and the imports of the United States will give basis for some conclusions regarding the way in which American agriculture would be affected if a complete national system were adopted with respect to the production at home of all the agricultural products used in our homes and in the maintenance of our national life.

The agricultural imports may be classified as follows on the basis of the possibility of producing the supply at home:

1. *Of our agricultural imports some cannot under natural conditions be produced in the United States.* There is a lack of proper soil and climate which makes it physically impossible to grow the product without providing artificially the necessary conditions. For example, rubber, cocoa, and bananas are tropical products which play an important part in our life, and which we would probably do without if we could not carry on commerce with South and Central America. Coffee may belong in this same class, though it has been claimed that rather large potential coffee areas exist along our southern border. Where these articles are luxuries, we may be better off in times of war without them, but where they are important

in our commerce and industry, as for example the raw material for making binder twine, the probability of having the supply cut off in times of war should be carefully considered, and, if the case be serious enough to justify the action, the production of substitutes should be stimulated, or great quantities held in storage with which to meet emergencies.

2. Other agricultural products which are now largely imported could be produced in the United States in great abundance, but the natural conditions for their production are relatively less favorable than in foreign countries. Hemp, jute, and lemons may be given as examples. If world peace can be assured as a condition of a world economy, articles of this class may well be brought from abroad; but if peace is very uncertain, the necessities in this class may better be produced at home at a greater cost.

3. Some of our agricultural imports could be produced in the United States in quantities sufficient to take the place of the imported supply, and the natural conditions are as favorable for their growth in this country as in foreign countries, and yet it is profitable in times of world peace to import them from abroad rather than produce the whole supply at home. This may be true (a) because the land which is well suited for the production of a given imported crop can be used more profitably in the production of *some other crop* which does not thrive in the foreign country from which we import. (b) Again, this may be true because *labor and capital are more abundant and wages and interest are lower in the foreign competing country*. The sugar beet may be taken as an example of a crop which thrives as well in parts of the United States as in Europe and which cannot be produced with profit in the United States without a bounty or a protective tariff. Both of the above conditions are operative in making beets unprofitable in parts of the United States. There are large areas with suitable soil and climate for the production of beets where corn or tobacco are competing crops. These crops do not compete in the beet regions of northwestern Europe. Hence, under free competitive conditions, it pays better to import sugar than to produce it

in the corn belt of the United States. Outside of the corn belt, especially in California, Colorado, Utah, and Idaho, the question is less a matter of competing crops than it is a matter of high cost of labor, yet in these regions beets compete with potatoes and alfalfa. Raw silk and tea are good examples of crops which are practically excluded from being produced in the United States because of the wide difference in the cost of labor in the United States and in eastern Asia. The first of these reasons for finding it more profitable to buy than to produce is a permanent one. It is based upon natural forces. The second is based partly upon differences in the density of the population in different parts of the earth, and, hence, being a social condition is subject to change.

4. Some articles can be produced profitably in *limited quantities* but not in sufficient abundance to satisfy the demand of the nation because of the limited areas on which they prove to be the strongest competitors for land, labor, and equipment. Wool is an example. Wool is the most profitable product which can be produced in some of the high, dry areas of the Rocky Mountain region, and in some other regions where rough grazing lands are abundant and where the dairy cow is not a strong competitor. Sheep may also find a profitable place in small numbers on the general farm, but so long as cheap wool may be secured from South America and Australia, it may be that the greater part of the supply can be imported more cheaply than produced at home. This has proved true even when a protective tariff favored the home grower of wool.

5. Some articles can be produced profitably in *certain qualities*, but not in all qualities desired by the people of the United States. Cotton, for example, is imported, not because we do not produce as much cotton as we consume, but because it is possible to get a very special variety of cotton from Egypt. Tobacco is another example. We export much tobacco, but, in order to meet the demand for certain qualities, tobacco is imported from Cuba and Sumatra.

When all these conditions which give rise to commerce are considered, it becomes obvious that with a given outlay of

labor and capital the wants of the people can be more completely satisfied by producing the things which pay best and buying from abroad the articles which cannot be produced or which it is less profitable to produce in this country.

The economic policy which should be followed by a nation will depend largely upon the prospects for world peace and the safety of international trade. Were world peace assured, a world economy would be desirable, but at the present time the student is constrained to give due attention to the importance of the all-round development of agriculture with a view to being able to feed and clothe the people with a minimum of commerce in times when all international law is swept aside.

The opinion one will hold regarding free trade and protection depends in part upon one's judgment with regard to future peace. If we must become self-sufficing as a nation, *protection is one means of inducing farmers and manufacturers to produce commodities which they would otherwise find unprofitable. The national policy should be the one which will yield the maximum well-being for the people of the nation through a long series of generations.* In view of the long periods of peace which the world has enjoyed, particularly since the days of Napoleon, and in view of the present hope for the beginning of a new era of peaceful international relations, it would not seem wise to look to a continuous self-sufficing policy in order to be ready for war emergencies, but to be prepared for rapid readjustment in agriculture if a period of unsettled international relations should again overtake us. Sir James Caird advocated the free importation of wheat into England on the theory that since at that time wheat growing was less profitable to the nation than grazing, it would be better to produce cattle during times of peace and buy wheat with the expectation that if war conditions should cut off the foreign supply the pastures could be plowed up, put into wheat, and made to produce more for the emergency than if wheat had been grown continuously. This is exactly what England did, and during the World War the wisdom of Caird's advice was demonstrated.

Grain and cotton stand out as our great agricultural exports.

Sugar, molasses, and sirup together take the lead in value of agricultural imports. Coffee is next in importance. Fruits are both exported and imported in large quantities. This is due to the fact that the United States produces a surplus of certain kinds of fruits, namely, dried apples, prunes, raisins, apricots, and peaches, which are exported, whereas we produce, for example, less than we consume of bananas, lemons, and pineapples.

To become a self-sufficing nation we would have to reduce our grain crops and our cotton crops and produce more cane and beets for sugar and molasses, and either reduce our coffee consumption or learn to grow great quantities in the potential coffee regions of the United States. Our area is broad and includes a very great variety of soils and climate, and yet there would be undoubtedly a much smaller amount of agricultural products available for consumption in this country under a self-sufficing economy than under a world-wide commercial economy.

The experimental and educational method of stimulating the introduction of new crops has proved important in this country. For many years the Secretary of Agriculture made large expenditures to stimulate the beet sugar industry in the United States. There were those who pointed out that the high cost of labor put this country at a distinct disadvantage over the beet sugar producers of northwestern Europe. Others pointed out that in the corn belt, in particular, the beet would be unable to compete with corn for the reason that the area on the surface of the earth capable of corn production is very small compared with the area capable of beet production, and for this reason the relative prices of corn and sugar on the world market will tend to be such as will enable corn to drive sugar out under conditions of open competition, and that there are other crops which we can grow which will add more to the well-being of the people. These views seemed justified and were true under the assumption of world peace. But, as a matter of fact, the stimulus resulting from government activity established a beet sugar industry which was tottering to a fall under free trade,

but which has come forward with great energy to meet the emergencies incident to war. In the light of recent events and taking into account the entire cost of stimulating this industry in time of peace, has the fostering of the beet sugar industry been justified? The same question arises with respect to wool and other farm products. The experimental method may be better than the bounty or tariff for stimulating industries which will succeed on a small scale. This is true of most farm crops, but it is perhaps not true of most manufactures.

There are many conditions under which it is desirable to stimulate the production of articles which the farmers have not on their own account found occasion to produce. The absence of production may be due to lack of knowledge of the profits, lack of skill in the new line of production, or it may be due to the fact that the crop is temporarily less profitable than some competing crop, but in the long run would be more profitable. Where a crop is less profitable than another, and this is due to permanent physical conditions, only the necessity for a self-sufficing national policy will justify stimulating the farmer to produce the crop. But where the conditions which make the crop unprofitable are temporary, social conditions which may be changed, such as sparse population, lack of knowledge or skill, the case is a very different one. It may pay to stimulate immigration and education, and give bounties or tariff protection which will make it profitable for farmers to take up the new lines of production.

In general, any industry which can be established in a few years, and which when once established will be able to stand on its own merits without government stimulus, should be stimulated during the period of its introduction. During the infancy of the new crop or agricultural industry, the labor and capital expended may add less to the national dividend than some old crop or industry, but this loss is only apparent, and is *really chargeable to the capital account of the country if when established the new crop pays better than the one it displaces.*

To summarize, each nation should produce those agricultural products which in the long run will add most to the well-being

of the people. So far as feasible, the products should be those which will make the agricultural productions reach the *maximum long-time average value under conditions of free competition among producers and among consumers throughout the civilized world*. In estimating the long-time average values of products, weight should be given, however, to the chance of war, if they must be secured from abroad. Furthermore, in figuring the maximum average value, where there are temporary conditions which retard the development of an industry, the principal weight should be given to the future.

In addition to the economic and political conditions which have been considered above, there are ethical questions which should not be lost sight of by the statesman in settling the question of what the farmers of a nation should produce. Many statesmen will feel that the desires of men should be curbed in the interest of human welfare. This may lead them to study physiological and ethical principles with a view to eliminating certain crops or products made from farm crops which are injurious to mankind.

CHAPTER IX

LAND AS A BASIS OF AGRICULTURAL PRODUCTION

LAND, labor, and equipment are the agencies of production. Without land there is no production of economic goods by the farmer, the manufacturer, or the merchant. The term "land" is here used in the broad sense to include all natural agents. When a man buys land he acquires the use of the air, the sunshine, the rainfall, the wind blow, and in the United States, unless especially specified to the contrary, he acquires all minerals lying beneath the surface.

While all classes of economic activity require land, agriculture makes the greatest demands for this agent of production. The census of manufacturers fails to record the area used by the manufacturers, but gives especial attention to the statistics of labor, material, and machinery used in the manufacturing enterprises. In the agricultural census the subject of the land area used is given a prominent position, and it is shown that in 1910 there were 878,798,325 acres of land in farms in the United States.

The economic uses of land have been classified as (1) affording standing room, (2) supplying mineral products, and (3) providing the conditions and materials of plant growth. Manufacturers use land for standing room and make heavy demands for the products of the mines. Commerce makes heavy demands for land to be used for transportation purposes and the location of warehouses, but agriculture makes use of the soil in the growing of plants which are the means of satisfying human wants.

Farm land varies greatly in its *economic capacity*. The capacity of a given area of land is measured in terms of the number of units of labor and capital which can be associated with it with optimum results at a given stage of industrial progress. The

capacity of land is influenced by its topography, temperature, rainfall, texture, and the kind of crops grown. Clay loam usually has greater capacity than sandy loam, that is, a greater amount of labor and capital must be put upon a given area in order to secure optimum results in a given line of production. In other words, land with high capacity permits of a higher degree of intensity of culture in a given year in the production of a given crop than land with a low capacity. This will be further explained in a later chapter.

Land varies not only in its economic capacity but also in its *economic efficiency*. *The economic efficiency of land is measured in terms of the value of the product per unit of labor and capital expended upon it.* The term "efficiency" is here used in the same sense as it is used by the engineer who calculates the efficiency of his locomotive in terms of the power developed per unit of coal shoveled into the fire-box, the only difference being that here we are calculating the number of dollars' worth of product per dollar's worth of labor and capital put into the land. More briefly stated, *efficiency is measured in terms of output per unit of "input,"* whereas *capacity is measured in terms of input per acre of land.*

Capacity and efficiency are the *two dimensions of productivity*. If one would compare the productivity of two pieces of land it is not enough to know how much corn or other crop it will yield per acre; it is necessary to know the expense of the production (the input) and the product per unit of expense. A piece of land might yield a large product per acre and yet class as relatively poor land because of the great expense of production.

The product is always equal to capacity multiplied by efficiency, and in order to compare the worth of two grades of land one should ascertain the number of capacity units per acre and the efficiency per unit of capacity. For example, in comparing land "A" and land "B" let us assume that land "A" has 10 units of capacity and "B" 8 units of capacity. If their efficiency were the same the ratio of usefulness would be as 10 is to 8. But each capacity unit, that is each dollar expended

on "A" land yields \$1.60, whereas each dollar expended upon "B" yields only \$1.50. The productivity of "A" is, therefore, $\$1.60 \times 10$, or 16, while the productivity of "B" is $\$1.50 \times 8$, or 12. Thus while the capacity ratio of "A" and "B" is 5 to 4, the efficiency ratio is 16 to 15 and the productivity ratio is 4 to 3. How much more can a given farmer afford to pay per acre for "A" land than for "B" land?

Productivity of land may be thought of in terms of pounds or bushels of product per acre, *physical productivity*; or productivity may be thought of in terms of the value of the product per acre, *economic productivity*. Land varies greatly in physical productivity due to differences in its physical and chemical properties, and it varies greatly in its economic productivity because of differences in the value of the product per unit in different localities as well as in the kinds and quantities of products on different pieces of land.

Under the physical conditions which are conducive to plant growth are included: (1) the moisture and (2) the temperature of the soil and the air, (3) topography, and (4) the mechanical structure of the soil. The amount of rainfall and sunshine remaining the same, the moisture and the temperature of the soil, and its capacity for retaining the chemical elements of fertility vary greatly from place to place because of differences in the size of the particles of the soil. By cultivation the soil may be improved to some extent, in this respect. By drainage and by irrigation the moisture of the soil can be modified, and by the use of glass and artificial heat the temperature of both the soil and the atmosphere can be regulated. But in most places and for most purposes Nature has done infinitely more for man than he can do for himself in providing the land with these desirable physical qualities.

From the standpoint of the economist the most important chemical conditions of plant growth are: (1) nitrogen, (2) phosphoric acid, (3) potash, and (4) water. Other chemical compounds contribute to plant growth, but these four are the ones which require special attention because they are present in the soil in limited and varying quantities, and because they

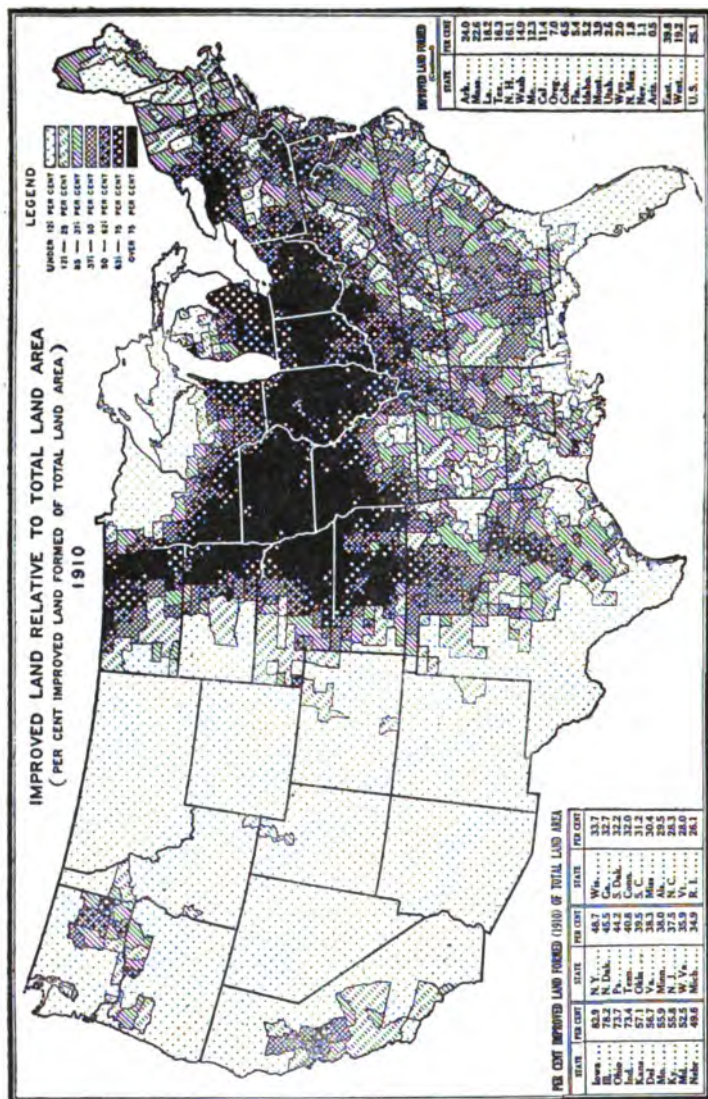


FIGURE 2 shows, by counties, the approximate percentage of the total land area which was improved farm land April 15, 1910. The statistics, taken from the reports of the Thirteenth Census, afford the latest information available on the subject.

are more or less readily exhausted and require considerable effort to increase or replenish their supply. In the humid regions where the water needed by plants is abundantly supplied by nature this element of fertility requires little or no attention, but in the arid regions water ranks first in economic importance. The carbon dioxide gas of the air is as important to plant growth as is water, but it is present in such great abundance that it has no value placed upon it and hence does not enter into the list of economic conditions which require our attention.

In comparing the value of two pieces of land physical productivity is not a safe basis for the reason that the physical product of two pieces of land may be the same but the values of the products may be very different, due to differences in the cost of marketing the products.

When a man contemplates the purchase of a farm, he wants extent of land with even topography and he wants this land to be fertile, but what is sometimes even more significant than these qualities is the *location of the farm which he is to cultivate*. In fact the physical and chemical characteristics of the land are greatly influenced by its location. Heat and moisture, and the character of the rocks from which the soil is formed vary greatly from place to place. But besides these variations in the natural conditions, there are variations in the social conditions which influence the production and sale of products. Large populations are in some places concentrated on small areas, leaving vast territories sparsely settled. This variation in the density of population may be explained, in part at least, in terms of variation in the physical environment, but our especial interest is in the effect and not the cause of this variation in the density of population. The farmer who is near a great center of population, such as London or New York, can sell his products for the same price which is paid for like products which have been shipped great distances. Thus it is that of two pieces of land possessing the same physical productivity, or fertility, the farmer prefers the one located nearer a great center of population, because of the greater "farm value" of the products.

Because of these variations with respect to fertility and location, land is said to vary in *economic productivity*, or, in its value-producing power. Variation in physical productivity of land is due to variation in soil, variation in rainfall, and variation in temperature. The soil in the United States varies from the sterile, arid sands of the great American desert to the well-watered fertile loams of central Illinois, from land that will yield nothing to land which will yield enormous crops of corn year after year.

The improved land of the United States is shown in the accompanying map which is based upon the "improved land in farms." In 1910 there were 478,451,750 acres of improved land in the United States. The enumerators were instructed to include under *improved land*, "all land regularly tilled or mowed, land pastured and cropped in rotation, land lying fallow, land in gardens, orchards, vineyards, nurseries, and land occupied by buildings." The improved land is not evenly distributed over the United States. For example 82.9 per cent of the total area of Iowa, 78.2 per cent of Illinois, 33.7 per cent of Wisconsin, and 1.8 per cent of New Mexico is improved farm land. Only 25.1 per cent of the total area of the United States is given as improved farm land, whereas 73.2 per cent of England is improved farm land. The relatively low percentage of improved land in the United States and the uneven distribution of this land can be explained largely in terms of topography, soil, and climate. A map showing the topography of the United States helps one to understand the low percentage of improved farm land in the large areas occupied by mountains. (See Fig. 3.) A map showing the rainfall helps one to understand why vast areas are eliminated from this class of plowed or mowed land, there not being enough rainfall to support tilled crops. (See Fig. 4.) The soil map shows the great irregularity of the soils of the United States with regard to their usefulness. A map showing the mean temperature during the growing season also throws light on the distribution of improved land. The resultant of all these forces is given in a map showing the value of all farm crops by counties in the



FIGURE 3 shows the topography of the United States in a generalized way. It is a photograph of a relief model of the United States, and was courteously supplied by the U. S. Geological Survey.

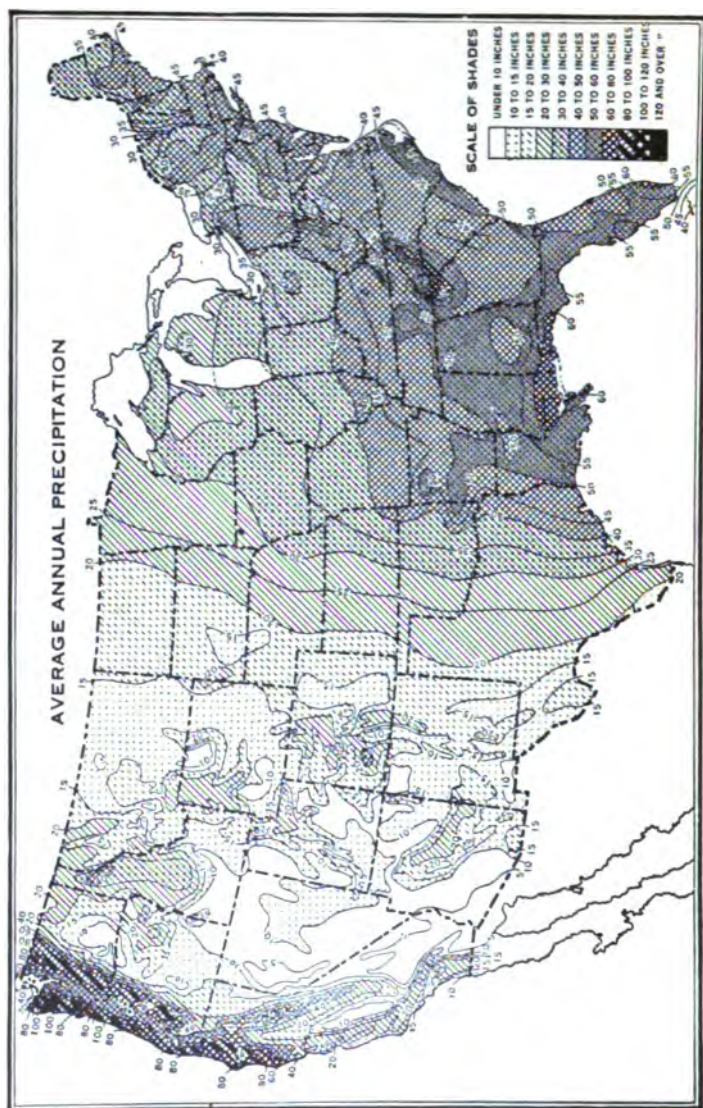


FIGURE 4 shows the average annual precipitation (rain, melted snow, sleet, and hail). It is much reduced and generalized from a map prepared by the U. S. Weather Bureau for publication in the Precipitation and Humidity section of the Atlas of American Agriculture.

United States in 1909. (See Fig. 5.) *The variation in value of crops is due, of course, not only to differences in topography, soil, and climate, but to differences in the character of the people cultivating the land and to differences in the distances from the market.*

While only 25.1 per cent of the total land area of the United States is *improved farm land*, 46.2 per cent of the total area is in farms. Thus 21.1 per cent represents *unimproved land in farms*. This is not to be ignored when considering the land basis of agriculture. Much of this unimproved land provides valuable pasture. It is never plowed or mowed, because it is too wet, too hilly, or contains too many obstructions such as stones and stumps. In five counties in southern Wisconsin for which pasture statistics are available, 78.5 per cent of the *unimproved land in farms is reported as used for pasture, about $\frac{2}{3}$ of which was designated woodland pasture.* A large share of the woodland on farms yields considerable pasture. This same area yields wood for fuel, fencing and buildings, also wood products for the market, such as posts, lumber, and cord wood, which supplement the farmer's income. On one farm in central Wisconsin, which is more than half woodland and on which the tillage area is gradually encroaching on the timbered area, about one-fifth of the total farm receipts comes from the sale of wood in various forms.

The vast areas of *land not in farms* in the United States is mainly occupied by mountains, deserts, forests, cities, railways, etc. A part of it is used as range pasture, but much of it serves no agricultural purpose. Some of it can be converted into farms, but the greater part of it is at present far below the margin of profitable utilization.

Irrigation is proving an important means of extending agriculture in the arid regions. To quote Professor Elwood Mead: "The uninhabited and mismanaged areas of the arid region are full of opportunities. A realization of the possibilities of this region and of what man can accomplish by a right use of its resources has been of slow growth. To the early fur traders and explorers the arid region was a dreary, worthless waste. To neither Bonneville, Fremont, nor any of the multitude who

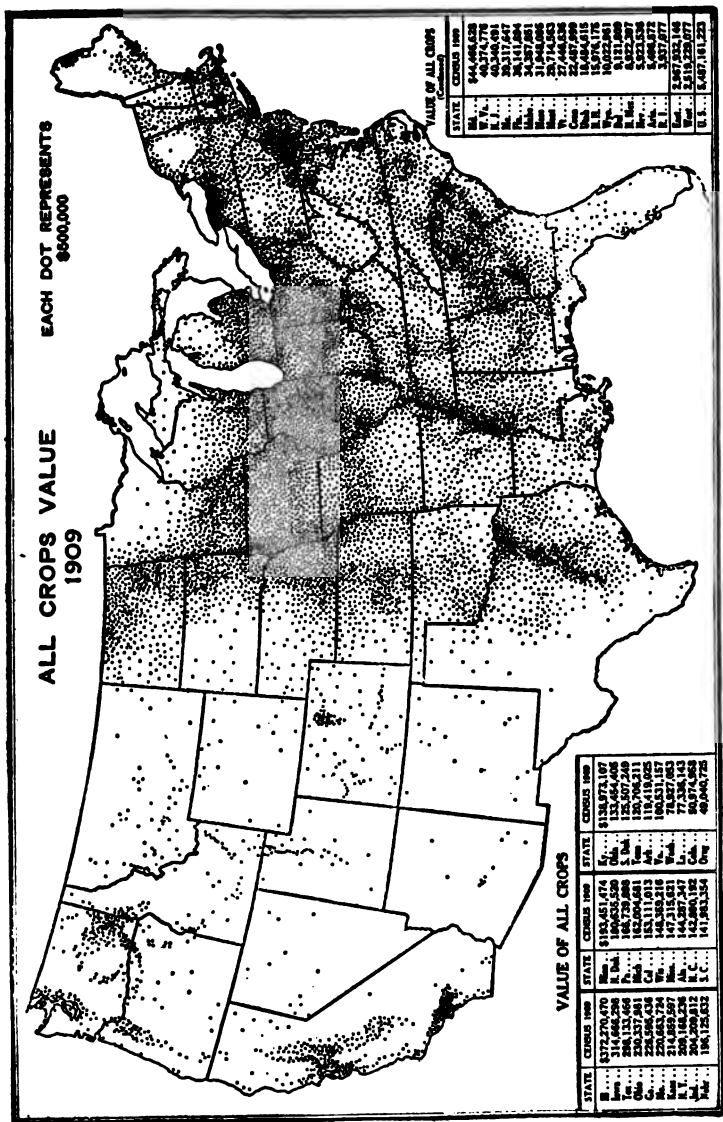


FIGURE 5

crossed its vast expanse to reach the golden rivers of California was there given any prophetic vision of the magic to be wrought by irrigation. Nor is this surprising. It is difficult to imagine anything less attractive than the stretches of barren sand broken only by the isolated yuccas of the Mojave Desert, or anything more dreary than the crucifixion thorn of Arizona. Only in localities where the work of the reclamation has been in progress long enough to permit the growth of trees, flowers, and shrubs, can the possibilities of the soil and climate be appreciated. No greater contrast can be found anywhere than is afforded by a comparison of the desert above the ditches and the cultivated fields below them. . . . The arid West is the nation's farm. It contains all that is left of the public domain, and is the chief hope of those who dream of enjoying landed independence, but who have little beside industry and self-denial with which to secure it. As it is now, this land has little value. This is not because the land lacks fertility, but because it lacks moisture. Where rivers have been turned from their courses, the products which have resulted equal in excellence and amount those of the most favored district of ample rainfall." And yet, with respect to the proportion of these arid regions which may be made productive, the same authority gives the following rather discouraging estimate: "if every drop of water which falls on the mountain summits could be utilized, it is not likely that more than ten per cent of the total area of the arid West could be irrigated, and it is certain that, because of physical obstacles, it will never be possible to get water to even this small percentage."¹

The clearing of cut-over land. There are vast areas of land in the United States formerly in forest from which the saw timber has been cut, much of which may be converted into farm land. This land usually requires a very considerable amount of labor supplies and equipment to clear it of stumps and brush. This accounts for the fact that it has been passed by so long as rich prairie lands were available. Unfortunately, however, much of this cut-over land both in the North and in the South

¹ *Irrigation Institutions*, pp. 2, 3, and 5.

is of poor quality for farming purposes because of the excess of sand in the soil. By careful selection very important quantities of good land can be added to our farm area at an expense which will prove a profitable investment.

Drainage is another important means of expanding the area of improved farm land. Along the rivers and coasts and in much of the glaciated area of the United States marshes and swamps are found which when drained will add greatly to the supply of farm land. It has been estimated that 70,000,000 acres of land await improvement by drainage.

The introduction of *new varieties of grains* and forage crops which are suited to semiarid regions makes possible the extension of agriculture where the rainfall is too light for the crops which are commonly grown in the humid regions. For example, the drought-resisting macaroni wheats have recently been introduced with great profit. "In many places west of the rooth meridian, where wheat growing with other varieties is practically impossible on account of drought, the eastern Russian varieties by virtue of their extreme drought-resisting qualities will produce, ordinarily, a crop of from twelve to twenty bushels per acre. By the use of these wheats, therefore, these localities may become important additions to the wheat area."¹

The introduction of several varieties of sorghum as forage crops in the southwest is resulting in the expansion of farm land in western Kansas and parts of Texas and New Mexico.

Along with the introduction of new crops which can be grown on semiarid lands, much is being done to expand the area of plow land by new methods of culture commonly known as "*dry-farming*," which consists in cultivating the land to conserve the moisture. It is common to cultivate the land for one season with nothing growing on it in order to conserve the moisture and then seed to wheat. By this means the wheat crop may have the benefit of more moisture than would be available if attempts were made to secure a crop each year.

¹ United States Department of Agriculture, Bureau of Plant Industry, Bulletin No. 3, p. 28.

The future will be very different from the past with regard to the expansion of the area of farm land. In 1850 the land area of the country was 1,884,375,680 acres, but only 15.6 per cent of it was in farms, only 6 per cent was improved farm land, and there were only 1,449,073 farms. In 1910 the total land area of the country was 1,903,289,600 acres, 42.6 per cent of which was in farms, 25.1 per cent of which was improved land, and there were 6,361,502 farms. The best farm land of the United States was brought into cultivation during the sixty years from 1850 to 1910. Prairie land and the development of the railway system made this the period of the most rapid development of farms in the history of this country. A study of the soil, climate, and topography convinces one that the expansion of the agricultural area will proceed much slower in the future than it has in the past. In fact the decade from 1900 to 1910 showed a great decline in the rate of expansion. Between 1890 and 1900 the farm area expanded more than 215,000,000 acres, while between 1900 and 1910 the farm area expanded only about 40,000,000 acres, though the increase in population was greater in the latter decade than in the former.

Quality of the new land. During the past sixty years, when the area of farm land was increased, it was not unusual for the new land to be more easily brought under cultivation and more fertile than the land already under cultivation.

This was true during the period of the development of the prairies of the north central states and the black prairie of Texas. In the future, however, when the demands for agricultural products make it desirable to resort to lands not now used for agricultural purposes, the new additions to the supply will either be expensive to bring under cultivation or infertile when brought into use. This means that the *new increments of supply will yield less per dollar of expenditure upon them and can for this reason be resorted to with profit only under condition of rising prices for farm products or falling costs for labor and equipment.*

The growth of our population is sure to make increasing demands upon the agricultural resources of the country, a part of which may be met by extending the industry into regions

which are not being used; but the most important means of increasing the supply of agricultural products in the future will be doubtless by farming more *intensively* the land which is already in use. This means that the part which labor, equipment, and skill in management will play in agricultural production will be more important, relatively, in the future than in the past. In other words, there will probably be a continual increase in the amount of labor and capital it will pay to expend on a given area of land with a view to increasing the product. This will make the problem of the proper degree of intensity of culture a central one in the minds of the thinking farmers.

While the product can be greatly increased by means of increased intensity of culture, it is true that after a certain point has been reached the return per unit of expense declines with every increase in intensity. Thus whether the new increments of supply of farm products are secured by expanding the farm area or by increasing the product per acre, the *law of increasing costs and diminishing returns per unit of social economic energy put into agricultural production* is almost sure to operate. *The hope for relief from the depressing effect of the law of diminishing returns lies in the improvements in men and equipment which will increase their efficiency.*

CHAPTER X

FARM EQUIPMENT

By the term "equipment" we mean all produced instruments of production. In this class fall all agencies of production excepting man and land or nature. Thus horses, tools, machinery, buildings, fences, seeds, feeds, and other supplies are here classed as equipment. Economists have used the term "capital" in the same sense the term "equipment" is used here. The term which clearly refers to the concrete goods rather than to their value or to the amount of money invested in them is preferred because a large share of the readers of this book are accustomed to thinking of "capital" as the amount of money invested in the land and the equipment together.

The equipments of the farm may be classed as movable and immovable. In the first class fall the live stock, tools, machinery, and supplies, while buildings, fences, wells, etc. form the latter class. A distinction is sometimes made between *operating capital* and *fixed capital*; the former is applied to those items which we call movable equipment, the latter including land as well as permanent improvements. It is only fair to note, however, in this connection, that a dairy cow barn and silos are just as truly operating capital in the milk business as the cows themselves, and a tobacco curing shed is operating capital to the tobacco grower as much as his transplanter, but in the common usage of the terms, the barns, silos, and shed would be classed as fixed capital.

Farm buildings in the United States were valued at \$6,325,451,528, April 15, 1910, or about 15 per cent of the valuation of all farm property. Implements and machinery were valued at \$1,265,149,783, and live stock at \$4,925,173,610.

The average value of farm buildings was \$7.20 per acre, that of implements and machinery \$1.44, and that of live stock \$5.60 per acre, a total of \$14.24 per acre for these equipments. The feeds, seeds, and other supplies on hand were not given, but the equipments given represent 30.5 per cent of the total investment shown in the census, and it is believed that when supplies are added for April 15, the equipment will equal at least one-third the total farm investment of the country.

The average value of each class of farm property per acre of land in farms is shown in the following table:

TABLE II
AVERAGE VALUE PER ACRE OF FARM PROPERTY

April 15, 1910

	ALL FARM PROPERTY	LAND	BUILDINGS	IMPLE. AND MACH.	LIVE STOCK
New England . . .	\$43.99	\$19.34	\$17.06	\$2.58	\$4.97
Mid. Atlantic . . .	68.52	33.86	22.70	3.88	8.08
E. No. Central . . .	85.81	61.32	13.93	2.28	8.28
W. No. Central . . .	58.18	43.21	6.71	1.59	6.67
So. Atlantic . . .	28.44	18.15	5.81	0.95	3.53
E. So. Central . . .	26.78	16.28	5.05	0.92	4.53
W. So. Central . . .	22.69	16.06	2.44	0.71	3.49
Mountain	29.52	19.73	2.44	0.83	6.53
Pacific	54.17	43.76	4.52	1.29	4.60
U. S.	46.64	32.40	7.20	1.44	5.60

From this table it will be seen that buildings and machinery are very much more important in the North than in the South, and in the East than in the West. These differences are due to differences in climate, type of farming, and the standard of living of those who live on farms. While the above table is useful in making comparisons with respect to the amount invested per acre in the different parts of the United States, the following table, showing the percentage distribution of value of farm property, is more useful in comparing the relative importance of each class of investments.

TABLE III
PERCENTAGE DISTRIBUTION OF VALUE OF FARM PROPERTY

April 15, 1910

GEOGRAPHIC DIV.	LAND	BUILDINGS	IMPLE. AND MACH.	LIVE STOCK
United States . . .	69.5	15.5	3.1	11.9
New England . . .	44.1	38.8	5.8	11.3
Mid. Atlantic . . .	49.4	33.1	5.8	11.8
E. No. Cen. . . .	71.4	16.2	2.7	9.7
W. No. Cen. . . .	74.3	11.5	2.7	11.5
So. Atlantic . . .	63.7	20.5	3.3	12.4
E. So. Cen. . . .	60.8	18.9	3.4	16.9
W. So. Cen. . . .	70.7	10.8	3.1	15.4
Mountain	66.8	2.8	2.8	22.1
Pacific	80.0	8.2	2.4	8.5

During the second half of the 19th century, northern agriculture was revolutionized by the application to agriculture of a great variety of labor-saving machinery. The sickle, the cradle, and the scythe were replaced by the reaping and mowing machines which did the work of many men. The reaper first simply cut the grain and left it to be bound by hand, but before the end of the eighties the self-binder was the common method of harvesting small grain of all kinds where grown in commercial quantities.

The methods of threshing small grain made great progress during the past century. Threshing with the flail, and tramping out by means of horses or cattle, were being replaced by simple forms of threshing machines in 1840. The early threshing machine consisted of a cylinder and a concave each studded with spikes. This machine was driven by horse power. This machine knocked the grain loose but did not separate it from the straw and chaff. The winnowing was usually done by means of the fanning mill turned by hand, though many farms in the West had no fanning mill. The thresher and fanning mill were soon combined in the one machine which threshed and cleaned the grain.

Aside from these inventions which center about the small grain, the most important inventions were the steel plow, the corn planter, the corn cultivator, the mower, the rake, and the horse hay fork. These inventions eliminated a great share of the labor involved in growing the staple crops of the North. By the use of machinery the effectiveness of human labor in the production of northern field crops was more than doubled.

This development of machinery seems to have been the result of a scarcity of labor at a time when railway transportation made the fertile prairies of the north central states accessible to the eastern markets, making commercial grain growing profitable. The invention of machinery has reduced the part played by human brawn and increased the part played by human brain, and by mechanical and animal equipment. The main tendency has been to increase the amount of land one man can operate. What the effect will be *when population increases more rapidly than the land, and the desire is to get larger amounts of product per acre instead of farming more acres*, is a question worthy of attention. Every effort has been devoted to *increasing the capacity of machinery with respect to land and the efficiency of machinery with respect to man*. The future need will be in the direction of greater efficiency of machinery, when measured in terms of product per unit of land.

The invention of the cotton gin in the previous century stamped upon the South a type of farming making large demands for hand labor in the field in hoeing and picking cotton. Little progress has been made in the use of labor-saving devices for the picking of cotton and the husking of corn.

The improvements in the live stock have been in the direction of greater productivity. The tendency has been to secure a hog which can be prepared for the market in from 6 to 9 months instead of from 12 to 15 months. The tendency has been to develop a cow which will yield a large amount of butter fat without careful records to show whether this is the result of large product per unit of feed or simply large product without regard to feed consumed. With high feed costs more atten-

tion must be given to the *efficiency* of cows if the farmer would secure high profits.

Throughout the past century the presence of cheap grazing lands resulted in the most careless use of land and feed in the beef cattle industry, but the recent movement has been the same as that in hog production. The beef animals are being produced in a shorter period which usually means greater efficiency in terms of land and feed. The baby-beef industry is the result of this movement for reducing the length of time required to produce a steer. This usually means more intensive culture and probably small gross returns per hour of human effort put into the business, but it provides labor for many more hours in the year and greatly increases the returns per unit of land.

Equipments of all kinds vary in capacity and efficiency. This is true of horses, cattle, sheep, and hogs. In each class there is a variation in the amount of feed and labor demanded by the different animals, or their capacity; there is also a wide range in the product per unit of input, that is in their efficiency. There has been a tendency for experimental feeders to confuse digestive efficiency and economic efficiency. This has led some people to believe that all differences in dairy cows, for example, are differences in capacity. The table on the following page based upon the results of the Wisconsin dairy cow competition, 1909-1911, throws light upon the question of differences in the economic efficiency of dairy cows.

It is believed that this table helps to establish the idea that being a "good feeder," however desirable this quality in a cow, is not the only qualification of a dairy cow. In the above table the cow which ranked second in the amount of feed consumed ranked twenty-fifth in product per unit of feed.

The range in efficiency of the 26 cows in the herd from which these figures were taken was from 1.44 to 2.46. When all of the 398 cows in the competition are compared the variation is much greater, varying from .92 to 2.71. It should be recognized, however, that when cows on different farms are compared, the differences may be due in part to differences in the efficiency

of the men in charge of the cows, and only partly to differences in the potential efficiency of the cows themselves.

TABLE IV
VARIATIONS IN EFFICIENCY AND CAPACITY OF 26 REGISTERED HOLSTEIN
COWS UNDER THE SAME MANAGEMENT

EFFICIENCY		CAPACITY		PRODUCTIVITY			
Rank	Product per Unit of Feed	Rank	Value of Feed Consumed	Rank	Value of Product per Cow	Rank	Value of Product minus Cost of Feed
1	\$2.46	1	\$99.83	1	\$246.10	1	\$146.27
2	2.40	16	86.42	5	207.76	4	121.34
3	2.38	7	91.05	3	216.52	3	125.47
4	2.34	5	94.05	2	220.01	2	125.96
5	2.28	4	94.06	4	214.87	5	120.81
6	2.13	18	86.06	6	183.53	6	97.47
7	2.09	20	84.20	10	176.39	7	92.19
8	2.06	14	86.70	8	178.56	8	91.86
9	2.05	13	86.75	9	178.11	9	91.36
10	1.93	15	86.59	13	166.70	12	80.11
11	1.91	11	88.52	12	169.20	11	80.68
12	1.91	6	94.01	7	179.25	10	85.24
13	1.82	17	86.23	15	157.20	14	70.97
14	1.76	3	98.93	11	174.64	13	75.71
15	1.74	26	82.69	20	143.61	18	60.92
16	1.73	25	82.94	22	143.18	10	60.24
17	1.72	12	87.03	18	150.02	16	62.99
18	1.72	9	89.07	16	153.51	15	64.44
19	1.72	21	83.52	21	143.61	20	60.09
20	1.69	23	83.10	23	140.46	22	57.36
21	1.69	9	89.16	17	150.68	17	61.52
22	1.65	24	83.01	24	136.60	24	53.59
23	1.63	8	89.32	19	145.41	23	56.09
24	1.60	22	82.22	25	131.35	25	49.13
25	1.58	2	99.74	14	157.28	21	57.54
26	1.44	19	84.77	26	122.22	26	37.45
Average	\$1.91		\$88.46		\$168.72		\$80.26

There is a wide range in the efficiency and the capacity of the different machines intended for essentially the same purpose, as for example plows, harrows, mowers, hay rakes, hay loaders, reapers, threshers, and silage cutters.

These differences exist at a given time because one kind of machine is suited to one condition with respect to climate and topography while another machine suits best under other conditions. The fact is, however, that improvements made by one company of manufacture is soon duplicated by another, so that the machines on the market, available for a given type of farming, vary but little after the principle has once been thoroughly worked out. Mowing machines and self-binders, for example, vary but little in construction aside from speed of the sickle and length of the cutter bar, which differences enable the farmer to choose to suit his condition.

The range in the efficiency and capacity of machines is best emphasized when the subject is viewed historically. Studies made by the United States Department of Labor show that by the methods used in 1829-1830 one hundred hours of labor would produce about 46.5 bushels of barley, whereas in 1895-1896 one hundred hours of man labor results in over 1100 bushels. While all of this change cannot necessarily be attributed to the improvement of machinery it is certainly true that the efficiency of machinery as measured in terms of product per unit of human labor was enormously increased as a result of the new forms of machinery introduced during this period.

In the production of wheat each day's labor produced $3\frac{1}{2}$ bushels in 1829-1830, while under the machine method of 1896 the product had expanded to 60 bushels per day of human labor. In general the increase in product per unit of man labor has varied from 150 per cent in the case of rye to 2244 per cent in the case of barley.

Some of the machines which have so greatly increased the product per man in agricultural production are too expensive to be owned by the small farmer. The threshing machine, the ensilage cutter, and the corn sheller are typical examples. Instead of increasing the size of the farm beyond the point of

economy when other forms of equipment are concerned or reducing the machine to an inefficient size in order to make the machine fit the farm, the practical solution has been to have one farmer own a machine with which he does the work for a whole neighborhood. For six weeks in the fall the dairy farmer of southern Wisconsin works in coöperation with his neighbors threshing grain and filling silos.

For some farms the self-binder is a burden because it is kept a year for two days' work. Where there is but little machine work to do the economy of making one binder do the work on several farms is obvious.

The tractor is the most expensive piece of farm machinery which the farmer has contemplated buying for his own use. It would appear that some plan whereby the plowing of a neighborhood might be done by one tractor would be more in keeping with good farm economy than to put a tractor on each farm where it will stand in the shed most of the time. Furthermore, before buying an expensive machine, like a tractor, the farmer should consider very carefully the annual cost of its use including interest, depreciation, repairs, and supplies. This should be balanced over against the reduction of other costs and the increased income. The danger is that the farmer will underestimate the cost of using a tractor and overestimate the amount it will reduce other costs, such as horse labor costs and human labor costs. The fact that machinery has done so much for the farmer in the past leaves him open to exploitation, and the danger is that the agricultural papers will join hands with the manufacturers in carrying on this exploitation.

Equipments are very different from land with regard to the possibility of *increasing the supply*. The increase in the supply of animal equipment is limited only by scarcity of land on which to produce herds. The supply of *tools and machinery may also be increased indefinitely*, the limit being set only by the amount which the farmers can use with profit on the available land area. In general, it may be said that *the equipments may be expected to increase more rapidly than the land supply*.

The contrast between land and equipments is greatest, how-

ever, when the qualities of the new increments of supply are considered. Whereas the new increments of supply of land are expected to be less and less useful as time passes, not only are the new increments of supply of equipments expected to be more useful than the old supply, but the old supply may be replaced by improved varieties. This is especially easy in the case of machinery where a new design unrelated to those formerly in use may entirely replace the old. With live stock, limitations are set by the fact that the new is the progeny of the old and possesses essentially the same characteristics. The opportunity for quick improvement here comes from the multiplying of the animals of superior quality and eliminating those of inferior quality.

In general, the possibility of continuous improvement of the usefulness of farm equipments makes the outlook for the future optimistic in spite of the fact that the new additions to the farm land area may be less and less useful.

CHAPTER XI

THE HUMAN BASIS OF AGRICULTURAL PRODUCTION

WHILE it is the purpose of agricultural production to satisfy human wants, and man is rightly considered the end in view in the production of all economic goods, it is also true that human brawn and human brain are so important in giving direction to the other factors that man may easily be counted the most important of the three factors of production. Whatever affects man as an agent in agricultural production seriously affects the results of this basic industry.

There is essentially but one class of people engaged in agriculture in the northern part of the United States, but in the South there are clearly defined lines of demarcation between managers and workmen. In the North the same man is usually a manager and a workman. Those who are workmen and not managers are usually young men who expect to become farmers on their own account in the course of time. The difference in the South is due to the presence of the colored workmen who labor under the direction of white managers. In many foreign countries there is a classification of the agricultural population into landlords, farmers or managers, and laborers. This is notably true of England. While one man may represent all of these classes in the United States, there are functions corresponding to the three classes. Especial attention will here be given to labor and management as functions of the human factor in agricultural production.

In 1910 there were about twelve and one-half million persons engaged in agricultural pursuits in the United States. About half of these were classed as farmers, and the other half were classed as laborers. Five-sixths of the total were male and one-sixth female, but of the laborers, three-fourths were male and

one-fourth female. Over three-fifths of the laborers are members of the farmers' families, and less than two-fifths are "working out."

The human element in agriculture is, as a rule, organized into family groups. Where the natural family is too small for the farm, additional members are taken into the family as wage earners. Where the families are too large for the farm, some of the members work for other families. While this is the rule, there are numerous exceptions. It is by no means uncommon to find a cottage on the farm where a married laborer lives and works for the farmer.

The family organization lends much to the permanency, the physical and mental character, and to the means of control of labor in agriculture.

The functions of man in agriculture may be divided into management and labor. There is no clear-cut division between the managers and the laborers on most farms in the United States. The organization is usually more or less democratic. The farmer or manager participates in the labor of the farm, and the other workers usually feel free to make suggestions regarding the management.

The managerial functions may be divided into two classes: First, the function of determining general policies. For example, the choice of a farm with respect to location and size, or the choice of types of farming with respect to crops to grow and live stock to keep, are questions which require careful deliberation. Second, the function of immediate supervision of the work. The projecting of the program of the day, and the meeting of emergencies as they arise require alertness of mind if the labor is to be directed with best results. Since every farmer must perform both of these functions, it is evident that farming is a business requiring men of many qualities.

Farmers vary greatly in their ability as managers and as workmen. This is a matter of common observation. J. E. T. Rogers¹ says, "Just as one field may grow more corn than another field, without putting the farmer to any greater cost in

¹ "Social Economy," pp. 36-37.

RANGES AND FREQUENCIES OF LABOR INCOMES.

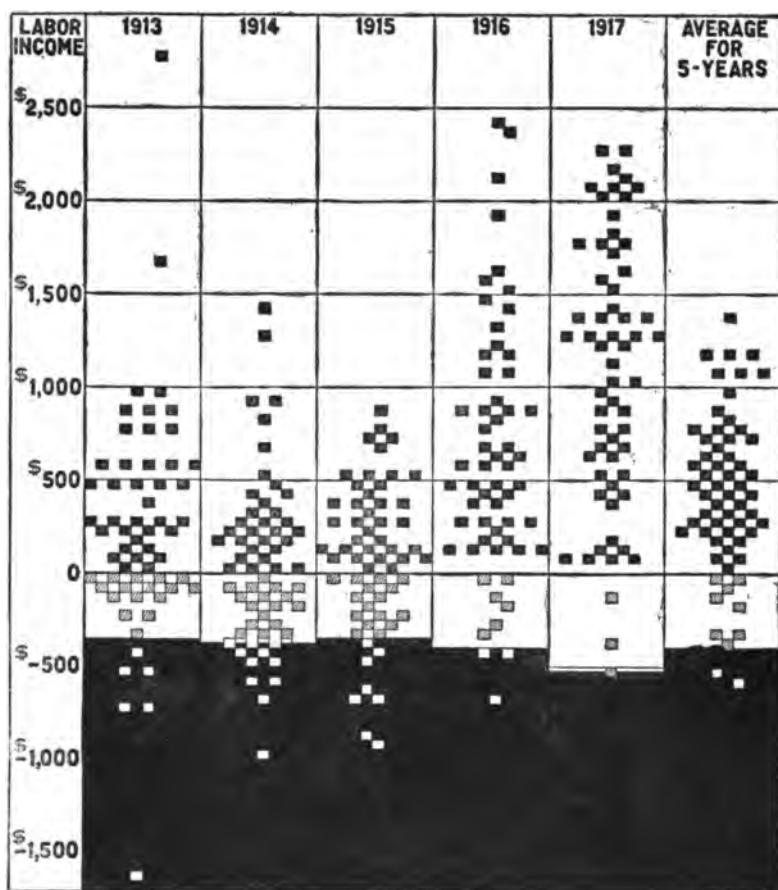


FIGURE 6. — The location of each dot in this chart indicates the labor income, *i.e.* the personal net earnings of one farmer. The wide range in earnings indicates a wide range in the ability of the 60 farmers, living near Verona, Wis., whose records are the basis of this chart. The farmers whose incomes are indicated by the shaded dots received food and shelter ranging in value up to about \$500. The white dots represent the farmers who lost money as well as their time.

cultivating it, — just as a shop in one street may be more suitable for business than an equally good shop in another street, — just as one mine may yield more coal or iron than another mine, while the cost of working both is the same, and so on with a variety of other such naturally useful objects, — so one man may, with no greater cost of preparation than his neighbor, earn a great deal more than that neighbor. There is a superior fertility of certain fields, a greater profit to be got in certain places, richer veins in certain mines, and similarly there is a greater natural power in certain minds. Two lawyers may have the same education and be equally diligent, but one may earn hundreds where another only earns tens. Two physicians may have had the same advantages of study, and have equally striven to profit by their opportunities, and one may make a fortune while the other can barely earn a living.

“Now in the case of the field, the shop, and the mine, it is easy to measure the natural advantage which the more favored possess over the less. . . . It is not so easy, however, to measure the advantage which superior abilities give some persons over others who work in the same calling; but they are none the less real and solid.”

There are, likewise, differences in men's bodies. These differences are easily recognized, but before giving further attention to the significance of these differences, an attempt will be made to outline the qualities of men which are essential to success.

Health and strength are essential qualities of the farmer. There are tasks on the farm which require skill rather than muscle, yet when the workman on the farm is followed from task to task and from day to day there is a great deal of work found which requires plain muscular strength, tasks in the performance of which the strong man may move with ease, whereas the weakling will wrestle without results. Two weak-musclcd men are often required to do the work of one strong man, and it often happens that a fine team of horses stands entirely too long, awaiting the loading of the wagon, simply because adequate human brawn is lacking. The man with ill health, who is often unable to work, has little hope for

success on the farm. The tasks of the farm must be done at the right time. The farmer cannot drop out for a day or a week and come back and pick up the work where he left off. There is no place for the weakling on the farm.

Skill in the variety of tasks of the farm is essential if one is to earn anything farming. The man without skill often earns less than nothing for the reason that he is associated with land and equipments which possess potential powers of production which may not be realized upon if not properly handled. For example, four horses and a gang plow cost about 50 cents an hour and should plow about half an acre per hour. If an unskilled plowman fails to plow more than one-third of an acre in an hour, the loss in the utilization of horse labor is enough to hire a skilled plowman. In feeding a calf, the unskilled feeder endangers the life of the calf twice a day and often occasions losses much greater than the amounts required to hire a skilled calf feeder.

No premium is usually paid for *ordinary skill* in farming over what the unskilled worker gets in other lines, for the reason that farmers of ordinary skill are abundant, and there is no alternative use for such skill. More people are trained in agriculture than are needed for the farms. What is not scarce has no value, and yet the young man without farm rearing who undertakes farming has before him the problem of acquiring skill at a time in life when it is expensive to acquire. No time is lost when a small boy picks up one by one the "tricks of the trade" and the skill of hand needed on the farm, but if a grown person has this skill to acquire he should not hope to secure very high wages while he is acquiring it. In fact, the farmer can scarcely afford to take a man without farm experience without charging him for the privilege of acquiring skill. It usually happens, however, that there are unskilled tasks about the farm at which the workman can earn something, although at the more important tasks he may be earning nothing or even losing money for the farmer.

The workman should be *capable of making suggestions* which may improve the quality of the work he is doing. Ingenuity

in improvising means of accomplishing the task assigned him is usually desirable if not associated with a stubborn disposition which makes the workman unhappy if he cannot have the privilege of making changes in methods without the approval of the manager. It is a fine quality to be able to suggest changes without any insistence that they be introduced contrary to the judgment of the employer.

The *work habit* is essential to a satisfactory workman. One who is industrious by habit enjoys his work and would rather work than be idle; putting forth his muscular energy is a joy to him. This is markedly in contrast to the lazy person for whom every action requires will-power to overcome the pain of exertion. It is the latter class who are always pulling back, setting a slow pace for the crew, and stirring up discontent. There is no place on a good farm for a man who does not enjoy work.

A *clear vision* of what is to be done is essential to both the functions, — management and labor. Ability to arrange the work in such a manner as to get a maximum of result with a given outlay is essential to good management. A clear mental picture of the work to be done, and how it may best be done makes farm management an easy task. Without this vision a manager is a blind leader.

Good judgment in deciding what to do at a given time and what to leave undone requires both knowledge of farming as well as experience in farming. Every workman must take a share of the responsibility for the successful operation of the farm; hence it is important that every man on the farm possess good judgment. Judgment is required in tightening a nut on a plow bolt, for if left loose it will come off, and if turned too tight it may break and delay the work. Judgment is required in feeding and in watering a horse, to say nothing of the judgment required in fitting a collar to a horse in such a manner as to keep the shoulders sound and in good working order. Then, again, judgment is required in setting and holding a plow or a cultivator, and in a thousand and one other things which arise in succession from day to day through the year.

Knowledge is essential to good judgment. Knowledge of crops, live stock, and machinery is essential to intelligent management. This knowledge should include the needs of the various crops and live stock, and the results which may normally be expected in terms of the physical productivity of each. This is not all that is needed, however. In order to decide intelligently on what to produce, it is necessary to know the prices which may be secured for each product of the farm and the price which must be paid for the use of land, labor, and equipments. The former knowledge comprises the physics, chemistry, and biology of farm management; the latter is the center of the economics of farm management. It is only the active-minded man who continually looks for new information who will keep informed in all these branches of knowledge which form the basis of rational farm management.

Ability to give and to receive directions and explanations relating to the work is very important. The tasks of the farm are spread over so much territory that each workman is largely self-directive in the carrying out of the work of the farm. The ability to hold conditions in mind in giving instructions, and to hold instructions in mind when carrying out the work is very important to the success of the operation. A workman should require to be told but once the depth the ground is to be plowed in a given field for a given purpose, the course to take in harrowing the plowed field the first time after plowing, the policy of the manager with regard to deep and shallow cultivation of corn, the system of feeding the horses and each other variety of live stock, the approved method of milking cows, and many other details. *A man who forgets what he is told and does as he likes may prove an unsatisfactory workman,* and certainly will unless he is very wise in directing his energies in the interest of the proprietor.

Self-control is one of the very important qualifications of the farm manager. He who cannot control himself will have little success in controlling others. Self-control is also essential to rational decision on crops to grow and live stock to keep. The man who lets his likes and dislikes take precedence over facts

and figures will certainly fall short of the possible results. One who follows his own taste, regardless of economic results, may temporarily get more personal satisfaction, but will make a less productive use of the land. From the national point of view, such a one is an undesirable kind of farmer in this one respect at least, and in the long run will be eliminated by competitive forces. *The high-type farmer coolly acts in conformity with economic forces, regarding it as his duty to himself, his family, and his country to make the right use of the agencies of production and to deal honestly and fairly with all men.* It is not always easy to be fair-minded in a transaction with a rascal, but even here the emotions should not lead a man to lose control of himself and let the spirit of revenge have supremacy over rational judgment. Self-control is essential to the mastery of economic forces.

Ability to hold one's mind on one's work is essential to doing the work well. The good workman who enjoys his work has no trouble on this score, but the lazy timeserver usually allows his mind to wander and his tongue to clatter, which insure inefficiency of the employee and his associates, whereas the man with his mind on his work adjusts his operations to changed conditions when needed and is in a position to improve methods. There is no place on the farm for the former, but the latter makes farming a joy to himself and his associates.

Ability to work to schedule is sometimes called the "time sense." Even among men with the work habit who enjoy their work, some know how to keep pace with time and turn off the work, while some do not. Men with the "time sense" will start the milking at the same time each day and finish the task without a variation of more than two or three per cent in the amount of time required. In plowing a field the man with the time sense turns off a day's work each day. He knows how many furrows he must plow in order to accomplish the amount he deems a day's work. He knows how much he must do each hour, and as the railway engineer watches his schedule, so does the good workman sense the pace required to accomplish a day's work. This is not so simple a task for the farmer

as for the locomotive engineer, because varied work and temperature, the air movement, the dryness of the soil, and the character of the previous crops all affect the speed which is correct for a given day. The schedule must be figured for each combination of circumstances which presents itself. The farm workman who has the time sense and for this reason works to schedule will earn from \$5 to \$10 per month more for this reason. *Much of the occasion for long hours on the farm can be removed by introducing system and snap into the work.*

Ability to control men is essential in the farmer who is an employer of help. This requires the ability to understand the temperament of men and to treat them in such a way as to bring out the action desired with good feeling on the part of every one. Fairness in the treatment of men is essential to this result. The manager who feels like criticizing the workman for accomplishing so little should assume in his questions that an adequate cause prevented the man from accomplishing more. In case of uncertainty as to how much should be accomplished, the manager should put his hand to the task. This will often make him well pleased with what others have accomplished. The manager who criticizes his workmen on the basis of things he has imagined to be true without making sure of the facts will lose the confidence, good will, and respect of the men under him, without which control is impossible.

Control is usually easier where workmen are young. Boys who have been used to parental guidance conform more readily to directions than older men who have been used to greater freedom of action. The fact that about half of the workers on farms in the United States, other than the farmers themselves, are members of the family of the farmer, greatly facilitates control of the workers on farms. This not only gives a paternal basis for control, but is supplemented by the worker's interest in the estate as one who may expect to share in the inheritance. This is one reason why the family farm is usually more successful than the farm operated by hired men.

Ability to cooperate with neighbors is important, especially at threshing time and when the silos are to be filled. Good

relations with one's neighbors depends more upon little things than upon important matters. The cats, the dogs, the pigeons, or the pet rabbits are more likely to cause trouble than the horses or the cows. The laws and customs regulating the farmer's rights and privileges with regard to these larger animals are well established, whereas in the case of these smaller animals property rights and restrictions on the freedom of these animals are not so well established. Generosity in these matters is essential to good relations with one's neighbors. It pays to humor one's neighbors in all small matters. This done, the larger relations are likely to be easily adjusted.

Faithfulness to the interests of the farm is a quality which makes the workman invaluable if he possesses the other necessary qualifications. This requires that the workman put the success of the farm, that is the doing of his work well and at the right time, above his own personal desire for comfort and entertainment. Hired managers are sometimes valueless, and often worth much less than nothing. Unless the leader is faithful, little can be expected of the other men. It sometimes happens that farmers do not take their own farm work seriously. Such farmers never command the respect of good workmen.

Interest in one's work is essential to faithfulness, and makes it easy. The time killer, the slipshod workman, the man of uneven and uncertain pace, the man of irregular habits regarding his eating, sleeping, and social activities, the man who likes to sit down but hates to get up; the man who continually uses intoxicating liquor; or the man without hard muscles and a clear mind has a difficult task before him even if he has a desire to do the square thing, and tries to be faithful to the interests of the farm.

One should carry out faithfully the plan which has been deliberately decided upon. For example, there may be differences of opinion as to whether the corn should be checked or drilled. The workman may desire to drill the corn, but the manager may decide, after considering all the arguments for and against drilling, to have the corn checked, especially because he fears the field cannot be kept clear of weeds unless it

can be plowed both ways. Faithfulness demands that the workman forget the contention, and put forth all his skill and energy in checking the corn so that it can be cultivated in both directions with ease. Workmen have been known who, under these circumstances, deliberately ran the check wire too loose or too tight or allowed the wire to creep across the field by drawing more from one end than from the other, and in various ways botched the job so that the corn could not easily be cultivated cross-wise, and hence nothing was gained by checking instead of drilling. Such action is proof that the workman is incapable of faithful service, and hence unworthy of his position.

Honesty is a prime requisite. The man who says he doesn't know, or who avoids telling his employer something which he knows and which the employer has a right to know, is dishonest. The man who breaks a tool and lays the parts together and assumes to know nothing about the accident is at heart a liar. There is no place on the farm for the liar, because he can never be trusted. The only safe and sane way is for the workman to report his mistakes and his accidents. A mistake reported may be adjusted and forgotten, but a hidden mistake grows into a larger difficulty, endangers mutual distrust, and ultimately the discharge of the employee. The only profitable way is for both parties to be honest where there is clearly something which ought to be said. Frankness may go too far, however. Too great freedom in saying what one thinks may lead to hasty and ill-advised statements. Only after careful consideration should criticisms be made, but when made they should always be presented directly to the one criticized and not to others.

Courage is a quality which adds greatly to the effectiveness of a man in any line of work. It is important, however, to discriminate between courage and conceit. Courage is defined by Webster as: "That quality of mind which enables one to encounter danger and difficulties with firmness, or without fear or fainting of heart." One who is conceited, according to the same authority, entertains a "flattering opinion of one's self." Conceit greatly reduces the value of a man to the farm. The con-

ceited man makes mistakes which are expensive and unnecessary. Conceit sometimes makes a man seem courageous who is really not courageous but foolhardy. True courage presupposes a correct estimate of one's own ability, knowledge of the difficult task to be performed, good judgment in undertaking or refusing to undertake the work, and resoluteness in executing the task if undertaken. Courage greatly increases the usefulness of a man on a farm.

Patience is another quality which adds to the value of the worker on a farm. A great variety of live stock must be trained to do what is wanted, and made to do the thing while yet untrained. *The man who loses patience loses power.* The man who keeps patient conserves his energies, and that of the animals with which he is working. The love for farm animals makes it easy to be patient in handling them.

These physical, intellectual, and moral qualities are possessed by farmers in widely different degrees of perfection. *These differences in the abilities of men account largely for the differences in the profits secured by different farmers and in the wages secured by different workmen.* A satisfactory choice of workmen on the part of employers, or a wise choice of employer on the part of workmen requires ability to judge the qualities of men.

It makes a difference which laborer is employed. Owing to the fact that men and equipment, as well as land, vary in their economic productivity, the total produce will be influenced by the way in which the grades of the different factors are associated for productive activity. The way in which this combination should be made is the subject of a later chapter.

The supply of the human factor. The human factor in production is less under direct economic control with regard to the *rate of increase of supply* or the *quality of the new increments* of supply than are farm equipments. Malthus' theory of population emphasized that *population tends to be as great as the productive energy of the country will permit.* In the form in which Malthus first stated the theory, the idea was emphasized that the pressure of population upon the food supply would ever be

such as to cause a great deal of misery. He later recognized various checks on population other than poverty, and it is now recognized that the standard of living desired by a people will determine how much the population will increase as a result of a given increase in the production of economic goods. Furthermore, the Darwinian idea of evolution through the struggle for existence and the survival of the fittest when viewed in the light of our present knowledge of the variations in the economic productivity of men leads to the view that it is those who are less capable as producers who are in danger of not being able to make a living in normal times. This means that there is a process of natural selection going on which tends to eliminate the less efficient, and thus lift the average of human efficiency. The ultimate good resulting from this evolution should not lead to ignoring the suffering of these who are on the lower margin. Society should care for them in a humane way which will not encourage their reproduction.

Whatever else may be true, the population of the United States has increased more rapidly than has the land basis of agriculture, and it is a matter of common belief that such an increase will continue, and that workers in agriculture will probably increase more rapidly than the land basis.

It has been seen that the new increments of land will probably be less and less desirable as more and more must be brought under cultivation to supply the needs of man. It has been noted that farm equipments may ever be replaced by those of the better quality. *The quality of the new increments of supply of farm workers may be improving* from generation to generation not because of control, as is true of farm¹ equipment, but because of the existence and improvement of our educational systems. It would seem at times that the inefficient have large families and the efficient small families, and that this militates against progress in the average intelligence of the farming population. It is often said, also, that education is a stepping stone from the farm and tends to sort out the best and take them from the country. These are the pessimistic points of view. The few data available tend to show that the

educated farmers are more efficient than the uneducated farmers in competition with them. One who is optimistic by nature will believe in the possibility of and actual progress in the increased economic efficiency of people who do the farm work of this country. But if a person is by nature pessimistic, he may magnify the possibilities of decline in the qualities of men due to the fact that the whole population gradually gives place to the younger generation. The hope is in the educational effort which teaches the younger generations what the older generations learned from experience and experiment, and thus makes the wisdom of the race cumulative.

When the three factors of production are compared, it will be noted that they are alike in that the individual units vary in economic productivity; they are unlike with respect to the rate at which they are increasing in quantity and with respect to the quality of the new increments of supply. If one assumes no change in men and equipments and a tendency to increased population not limited by present or higher standards of living, it is logical to take a pessimistic view of the future of mankind; but if one believes that the improvements in the qualities of men and equipment will offset the declining productivity of the succeeding new increments of land, and if one believes in the power of education to advance the standard of living, it is easier to be hopeful.

CHAPTER XII

THE CHOICE AND THE COMBINATION OF THE GRADES OF THE FACTORS OF PRODUCTION

It has been noted that all the factors of production have this common characteristic that they vary in their capacity and in their efficiency. Much has been heard in recent years about efficiency and the efficiency movement in the industries. About twenty years ago, at a time when some men occupying prominent positions in the field of economics were emphasizing the resemblances of the instruments of production, with a view to formulating simple and comprehensive principles, Professor Ely was saying to his students: "Give careful attention to the differences in the economic characteristics of the instruments of production. In these differences we may find some of the most significant conditions of our economic life." The facts and theories which are presented in this chapter are the result of taking this advice.

Capacity has been defined as power to receive, absorb, take into, or associate with. The word capacity has in recent years been popularly used to indicate the output of a mill or factory. In this book the original, and still the dictionary, meaning of the word "capacity" will be adhered to. In this sense capacity refers to "input," not to output. It has been recognized since the days of Ricardo that land varies with respect to the amount of labor and capital which can be invested per acre with optimum results, that is, land varies in capacity. Cows vary greatly in the amount of feed which they can consume with optimum results when fed with the same care and by the same man, hence cows vary in capacity. The same thing is found true of every specific class of instruments of production from milk pails to threshing machines. Variation in capacity

exists likewise in the human factor. There is a very wide range of differences in men with respect to the amounts of land, labor, and capital they can operate. High capacity is not always a desirable quality. For example, certain land requires much more power to plow and more work with the pulverizer and harrow to put it in condition for planting seeds, yet does not produce extra large crops per acre. The labor of milking some cows is twice as great as that required in milking others, and they do not necessarily produce any more milk. Capacity, or the power to absorb the other factors, implies nothing as to usefulness of a factor in cases of this kind unless taken in conjunction with efficiency.

Efficiency is defined as a ratio between the energy put in and the results secured. The efficiency of a factor of production is measured in terms of the value of the product per unit of the other factors (of given grades of efficiency) when associated in the most profitable proportions. To illustrate, two pieces of land may yield widely different results per hour of man and horse labor expended upon them by the same man. Two cows may vary widely in the amount of butter fat they yield per pound of feed consumed when the two cows are fed by the same man upon the same feeds.

The relation of capacity, efficiency, and productivity are easily understood. The productivity of a physical unit of an instrument of production, as an acre of land or a cow, is the resultant of capacity and efficiency. The product divided by the capacity equals the efficiency. In other words, capacity relates to "input"; efficiency to "output" per unit of "input"; and productivity relates to the total product per acre of land, per cow, or per man. The calculation of efficiency may be made in terms of physical product or in terms of the value of the product. In analyzing the productivity of cows and other movable instruments of production, physical productivity is often the better basis of comparison because of differences in values at different locations. In the case of immovable instruments of production the value of the product is the more satisfactory basis of comparison.

To illustrate the sense in which the term capacity is here used, assume that a given farmer, with a given outfit of horses, tools, and other equipment, can operate 80 acres of "A" grade land or 100 acres of "B" grade land, farming either piece to the proper degree of intensity of culture. This implies that "A" grade land has greater capacity for absorbing labor and equipment than "B" grade land. Each acre of the "A" grade land requires $1\frac{1}{4}$ per cent of the labor and equipment in question while each acre of "B" land absorbs only 1 per cent, which means that the capacity of "A" grade land is one-fourth or 25 per cent greater than that of "B" grade land.

To illustrate the idea of efficiency, assume that a given farmer with a given outlay for labor and equipment can secure a product worth \$1800 on "A" grade land and a product worth \$1600 on "B" grade land. Under these conditions the "A" grade land would be said to have a higher degree of efficiency than the "B" grade land. The difference in efficiency would be measured in terms of the difference in the product per unit of outlay. One hundred per cent of outlay yields \$1800 in one case and \$1600 in the other; \$1800 is $12\frac{1}{2}$ per cent greater than \$1600, hence "A" grade land may be said to be $12\frac{1}{2}$ per cent more efficient than "B" grade land. For further illustration see the problems at the end of this chapter.

One should not be confused by the fact that a given factor may have high capacity or efficiency in terms of one other factor and low capacity or efficiency in terms of another. For example, a gang plow may have high capacity in terms of horses and low capacity in terms of men. The same plow may have high efficiency in terms of men and low efficiency in terms of horses. Neither should one be confused by the fact that land with high capacity may have low efficiency and vice versa, *e.g.* heavy clay land may require much more labor per acre than a silt loam and for this reason, though the crops be larger, the product per unit of labor, *i.e.* the efficiency, may be smaller.

Variation in the economic efficiency of land was emphasized by Ricardo; variation in the efficiency of managers was elaborated by Walker. Clark called attention to the variation in

the usefulness of all the factors, but failed to recognize the distinction between differences in capacity and differences in efficiency, apparently assuming no differences except differences in capacity. Capacity and efficiency, under given conditions, are concepts as different as length and breadth. For example, if the capacity of a cow is measured in terms of the land, labor, feed, and other equipment properly associated with her, and if her efficiency is measured in terms of the value of her product per dollar of expense for the other factors, it becomes obvious that while two other cows of half the capacity and the same efficiency might be equally useful, because the product per unit of outlay would be the same, two other cows with the same capacity each as the one in question but possessing only half the efficiency could not be substituted for her without loss, for they would cost twice as much to keep and would yield only the same total product or only one-half as much per unit of expenditure.

A few facts may help to make clear the ideas in mind. In recent years a great deal of first-hand study has been made of the conditions of productivity in agriculture. The census method and the accounting method have been largely used in this work. In Table V are found the results of a careful census of the farmers centering about Dallas, Barron County, Wisconsin. There were fifty-one farmers in the community. The returns which these farmers secured per dollar of annual outlay varied from 77 cents to \$3.05. In this calculation the annual outlay included all operating expenses, including depreciation and interest. A glance at the second column of figures in Table V shows a variation from \$1734 to \$293 in the annual outlay with which these farmers associated themselves. The former are termed variations in efficiency; the latter are designated differences in capacity. (Though the writer would recognize that perfect adjustments may not exist with regard to the amount of land, labor, and equipment associated with some of the men, yet these men are probably striving for the optimum.) The variations in total product per man range from \$3644 to \$686. The farmers, as the residual claimants,

TABLE V
VARIATIONS IN EFFICIENCY AND CAPACITY

EFFICIENCY		CAPACITY		PRODUCTIVITY			
Rank	Product per Dollar of Outlay	Rank	Annual Outlay	Rank	Total Value of Product	Rank	Residuum for Farmer's Effort
The best 20 out of 51 farms.	1 \$3.05	48	\$ 421	37	\$1285	18	\$ 864
	2 2.84	33	932	8	2649	4	1717
	3 2.63	47	434	41	1143	22	709
	4 2.48	51	293	48	727	34	434
	5 2.40	49	333	46	799	32	466
	6 2.16	4	1683	1	3644	1	1961
	7 2.13	16	1334	7	2844	6	1510
	8 2.12	39	775	26	1646	16	871
	9 2.11	29	1026	16	2165	12	1139
	10 2.10	13	1379	6	2895	5	1516
	11 2.10	32	961	18	2018	13	1057
	12 2.09	1	1734	2	3619	2	1885
	13 2.07	5	1675	3	3473	3	1798
	14 2.05	21	1303	10	2472	8	1269
	15 2.03	30	983	19	2000	10	1017
	16 1.90	50	395	49	749	41	354
	17 1.88	15	1344	9	2533	11	1189
	18 1.86	6	1618	4	3016	7	1398
	19 1.84	42	739	33	1361	26	622
	20 1.83	37	881	27	1610	21	729
The poorest 20.	32 1.56	46	440	51	686	44	246
	33 1.52	40	764	39	1162	37	308
	34 1.52	22	1173	25	1778	27	605
	35 1.48	7	1595	11	2358	20	763
	36 1.47	27	1090	28	1602	31	512
	37 1.47	31	978	31	1435	33	457
	38 1.38	14	1358	23	1878	30	520
	39 1.37	2	1703	12	2339	24	636
	40 1.36	8	1595	17	2165	28	570
	41 1.29	28	1018	36	1309	42	291
	42 1.26	9	1505	21	1898	39	393
	43 1.24	10	1492	24	1853	40	361
	44 1.24	20	1211	30	1496	43	285
	45 1.20	25	1103	35	1320	45	217
	46 1.11	26	1095	38	1219	46	124
	47 1.08	34	932	44	1009	48	77
	48 1.07	19	1263	34	1348	47	85
	49 1.02	41	742	47	759	49	17
	50 .88	38	804	50	713	50	91
	51 .77	11	1469	42	1131	51	-338
Average \$1.66		\$1079.8		\$1797.2		\$717.4	

received payments for their efforts varying from \$1961 to minus \$338. It will be noted that, so far as the figures in this table go, there is no definite relation between a man's capacity as measured by his outlay and his efficiency as measured by product per unit of outlay. A man with high efficiency may have low capacity and the man with high capacity may have any degree of efficiency. These facts are brought forward to illustrate the well-known fact of variations in the ability of men and to note that at least two measuring sticks are needed if we hope accurately to measure man's ability.

Table VI illustrates some of the differences which exist in one class of instruments of production, namely, cows. This table shows the best ten and the worst ten of 398 cows entered in the Wisconsin Dairy Cow Competition during the two years 1909-1911, each cow being in the contest one year. It will be noted that the difference in value of product per dollar's worth of feed consumed by the best ten cows varied from \$2.71 to \$2.19 and that the range for the least efficient ten cows was from \$1.25 to 92 cents. The total range was from \$2.71 to 92 cents, the average result of the best ten was \$2.38, and that of the least efficient ten was \$1.11. In Table VI a common or standard price level was used in calculating the cost of the feed and the value of the product. It remains, however, to be explained that these cows were not all under the same management. The differences in product per unit of feed are due, therefore, to differences in the efficiency of men as well as to differences in the efficiency of cows. The cows in one herd in the same barn, receiving the same feed, care, and management, must be compared if cow efficiencies are to be isolated.

The fact of *differences in efficiency and capacity granted, are they significant from the standpoint of production?* From the point of view of the effective management of farms the significance of this analysis of the grades of the factors of production lies in its relation to the problem of right choice of the instruments of production which are to be combined under a given management. If difference in market valuations corresponded to each man's estimate of the variations in the usefulness

TABLE VI

EFFICIENCY, CAPACITY, AND PRODUCTIVITY OF THE BEST TEN AND THE POOREST TEN OF THE 398 COWS IN THE WISCONSIN DAIRY COW COMPETITION, 1909-1911

(Feed and Product Values Standardized)

The Most Efficient Ten Cows

EFFICIENCY		CAPACITY		PRODUCTIVITY			
Rank	Product per Unit of Feed	Rank	Value of Feed Consumed	Rank	Value of Product per Cow	Rank	Value of Product Minus Cost of Feed
1	\$2.71	8	\$ 75.32	5	\$204.11	4	\$128.79
2	2.62	5	88.56	6	200.33	7	111.77
3	2.60	10	64.62	10	167.94	10	103.32
4	2.49	9	72.60	9	180.60	8	108.00
5	2.46	2	99.83	2	246.10	2	146.27
6	2.36	7	78.24	8	184.94	9	106.70
7	2.34	6	83.88	7	196.06	6	112.18
8	2.31	3	99.20	3	229.55	3	130.35
9	2.28	4	94.06	4	214.87	5	120.81
10	2.19	1	129.40	1	283.84	1	154.44
Average of best ten		\$88.57		\$210.83		\$122.26	

The Least Efficient Ten Cows

1	\$1.25	6	\$ 77.17	3	\$ 96.69	1	\$ 19.52
2	1.20	2	96.55	2	115.75	2	19.20
3	1.18	10	67.28	8	79.10	5	11.82
4	1.18	9	74.82	6	88.06	4	13.24
5	1.13	1	103.69	1	117.45	3	13.76
6	1.11	4	82.47	4	91.72	6	9.25
7	1.10	7	75.22	7	82.66	7	7.44
8	1.06	3	84.85	5	90.26	8	5.41
9	.98	8	76.38	9	75.14	9	1.24
10	.92	5	80.26	10	74.16	10	6.10
Average of poorest ten		\$81.87		\$91.10		\$9.23	

of these instruments, the problem of choice would be solved, but this is not true. The individual valuations of given instruments of production have a wide range above and below the market valuations.

It is this discrepancy between individual and market valuations which makes it incorrect to take the position that one dollar's worth of agricultural land, labor, or equipment is as useful to the farmer as any other dollar's worth, that market prices eliminate the necessity of careful selection of the grades of the factors of production. It is, therefore, necessary for each farmer to use great care in the choice of the productive agents with which he associates himself.

An hypothesis which has been made and which bids fair to prove a practical guide is that *the factors which possess high efficiency should usually be associated together. The high efficiency land should be occupied by the high efficiency farmer operating high efficiency equipments.* For example, suppose the superior efficiency of "A" grade land over "B" grade is due to its location near the market, so that while the physical product per unit of the other factors (of given efficiency) is the same as on "B" land, the value of the product is twice as great on "A" as on "B" grade land. Assume also that farmers "I" and "II" vary also in their efficiency, which shows itself in the fact that the physical product which "I" can grow on a given grade of land is twice as great as that which "II" can grow. Under these conditions each farmer can secure twice as much product, in value, from the "A" grade land, as from the "B" grade land, but the extra product is twice as great for "I" as for "II." Each man can afford to pay more for "A" grade land, but the one with the higher efficiency can clearly afford to pay more than his less efficient competitor, and hence competition will tend to give the best locations to the most efficient users.

Variations in efficiency of two pieces of land may be due solely to *differences in the amount of physical product per unit of labor and equipment put upon them.* In this case is it important that the more efficient farmer operate the more efficient land?

The reply is, he should occupy that which is to him the more efficient land, recognizing the fact that all men will not grade land the same for a given purpose and that gradations vary greatly for different purposes. Assume our two pieces of land to be corn land and that one piece has more fertile soil, greater warmth, better drainage, etc., so that each stalk of corn grows more vigorously and yields a larger ear of corn and more fodder. Then call to mind the character of the differences which may exist in the men. The more efficient man uses better judgment regarding the time to plow the land so that the soil is kept in good tilth; he harrows at the proper time, driving in the right direction to smooth and crumble the land, thus reducing the holes and the clods to a minimum; he uses judgment in selecting the seed corn, which makes sure that each grain is vigorous and of the right variety for the particular soil; he plants the optimum amount of seed at the optimum depth; he cultivates at the right time; he maintains the stand of corn, that is, does not cover or otherwise destroy the stalks of corn; he eliminates the weeds; he maintains the soil mulch to hold the moisture when needed; and he avoids destroying the corn roots when cultivating large corn. For all these reasons he has more corn plants growing, and each plant yields more product.

Is it not obvious that this extra product due to more plants and better plants better tilled will be greater on the more efficient than on the less efficient land? To simplify the concepts confine the discussion to the influence of the stand of corn. The more efficient farmer has 95 per cent stand while the less efficient farmer has an 80 per cent stand of corn. That is, where there is room for 100 stalks of corn the one will grow 95 while the other will grow 80. Is it a matter of some importance that these extra 15 stalks be on the more efficient land, which means 15 large ears instead of 15 small ears of corn? From the standpoint of the competing farmers there is clearly an incentive for the more efficient farmer to seek the more efficient land and to outbid his less efficient competitor for this land.

The same principle applies to the choice of cows, horses, and hogs as to the choice of land. A good cow has been said to

produce 15 per cent less milk under inefficient care than under efficient care, where other factors are the same. Fifteen per cent of the product of efficient cows would be a greater loss than the same percentage loss on a low efficiency cow. Furthermore, in the handling of a herd of high efficiency the efficiency of the animals will fall from decade to decade under low efficiency management and improve under high efficiency management, so that regardless of first choice the efficiency of the cow tends to correspond to that of her keeper.

It will readily be recognized that gradation of land and equipments, as well as men, are very different for different purposes. To avoid confusion on this point it is best to recognize the presence of gardeners, dairymen, grain farmers, beef men, hog men, sheep men, cotton farmers, tobacco farmers, and various combinations of these such as are found in the various types of farming in the United States to-day. Each farmer falls into some class with respect to type of farming. He has only to consider grades of land and equipment which competition among types of farming has left to his type and then choose on the basis of gradation in this class in terms of his ability.

The practical man who recognized this principle of choice may properly suggest that its application is not easy for the reason that it involves knowledge of one's own relative efficiency as well as that of land and each of the kinds of equipment. The truth is, it takes time for a farmer to find his place in the system. If he ranks himself too high, losses will bring him down, for he cannot compete successfully with his competitors. If he rates himself too low, he makes some profit but not so much as if he had the use of more efficient land and equipment. The practical method is to be modest in rating one's self and gradually adjust equipment to ability by taking every opportunity to secure more efficient cows, horses, or machines when profits are clearly increased by the change. The adjustment to land qualities cannot so easily be made a gradual process. It is often necessary to change farms. During the period of tenancy is the time to work this point out so that when land is purchased it will be of the right quality.

Does it make any difference which grades of capacity are chosen by the farm manager? Only in the same sense that the mason finds use for stones of different sizes in building a wall, each occupying space according to its size, where there are spaces of varying dimensions to be filled. If land is of low capacity more can be used. If horses and cows are of low capacity but of the desired efficiency, more can be kept. The workman of low capacity may prove the right choice if only a small increase in help is needed. The city man who wants to produce milk for his family may find a cow of small capacity more profitable than one of high capacity because she supplies his needs and he has no profitable means of disposing of the surplus. The man who has small demand for horse labor may find the small capacity horse most profitable, while the man with much horse labor to perform might find such a horse unprofitable; thus variation in capacity helps to adjust the proportions of the factors, especially where the scale of the business is small.

In the choice of workmen it often happens that a man has high capacity for some purposes and low for others. For example, a boy may cultivate corn, cut hay, or drive a tedder or rake, showing the same capacity as a man who has much greater capacity than the boy in pitching hay in the field or handling the hay in the mow. By taking advantage of these differences and using each man where he shows the greatest capacity, profits may be increased.

There are various conditions which retard the movement toward the most economical combination of the factors. Ignorance of better opportunities and desire to stay where one's folks live are common hindrances to adjustment. Inherited wealth often enables an inefficient man to hold a highly efficient piece of land for a lifetime without being crowded out, whereas the same man would have found his level in a few years without the aid of his inheritance.

How does the right combination of efficiency grades affect total productivity? Total productivity of society is greatly increased by the combination of the factors which throws the

most efficient factors together. The productivity of the inefficient is minimized, it is true, but the productivity of the most efficient is at the maximum, and the total product, it is believed, is greater than any other combination would yield. True social economy calls for this combination, and it is these facts of variation in efficiency which give hope that competition may gradually lift the average of efficiency by the elimination of the marginal and the multiplication of the better and the best. So long as this process is in operation poorhouses will be needed, but is it not cheaper to provide for the inefficient in this way than to have them match their inefficiency with land and equipments which have high potential productivity?

Variations in efficiency and capacity have an important relation to the problems of the distribution of wealth, with especial reference to the ownership of land. It is the wide range in the efficiency and the capacity of farmers that makes possible the saving of the funds essential to the climbing of the agricultural ladder. Assuming the acceptance of the theory of the relation of prices of agricultural products and marginal costs, it follows that every man possessing efficiency superior to that of the marginal farmer may save from the surplus and rise to a higher rung on the agricultural ladder. It would seem also that the man of high capacity may save more than his competitor of equal efficiency who possesses lower capacity on the assumption that the man of high capacity has the same standard of living as his competitors.

It is not so much the purpose here to show how these factors have worked themselves out as it is to show the individual farmer how better to adjust himself to his complex environment, and to call the attention of the agrarian statesman to this fact of variations which are too often overlooked because it is easier to deal with the average, which is often a dangerous basis for practical legislation. From a political point of view this fact of variation gives basis for aid in education and for poor relief.

In choosing a farm the grade of land selected should correspond to the degree of efficiency of the farmer. A highly efficient farmer can make some profit on any grade of land. On the

most efficient land the chances for profits are greatest for the most efficient man, but the chances for losses are also greatest if one prove to be less efficient than his competitors. The safe thing for a young man to do is to rent land on shares and take the best land he can get. If he handles land well, he will be sought by the men who have the best farms. This will more or less automatically put the tenant farmer on the land corresponding to his ability. When he is ready to buy a farm, his experience as a tenant will give the basis for judging whether he should buy the choicest land and pay the price, which will necessarily be high, or take land of second or third class for which the competition is not so keen and for which an appreciably lower price will be asked.

Having decided to be a farmer, the young man should next decide upon the kind of farming he is to follow. This should be settled only after considering carefully his personal abilities, his likes and dislikes, and the results which he can hope to secure in the various kinds of farming.

Having settled upon the kind of farming to be followed, one should select land which competitive forces have set aside for this kind of farming. To insist on dairying in a hog and beef cattle district, or to insist on being a grain farmer in a region especially suited for and actually being used as a dairy district is to invite failure at the first move.

The character of the soil is an important consideration both from the standpoint of total product per acre and the cost per acre to operate. It is too common for farmers who are seeking land to judge the land entirely by the product per acre without looking into the cost per acre involved in growing the crop. It costs very much more to prepare a seed bed in one kind of soil than in another. In other words, the power of the land to absorb labor is very important, for the greater the input per acre the fewer the acres a man can operate and, the profit per acre being the same, the smaller will be his total profits. The starting point, in determining which land to buy, is to calculate as best one can the total net return which can be secured from the different farms which are available and then buy the one

which will leave the largest amount as net profit after deducting interest on the price of the farm, taxes, repairs, and depreciation.

The proportion of the time the land is in condition to be worked is of importance in choosing a farm. This is especially important on a grain farm where the field labor is the only form of directly productive labor. It is less important on a dairy farm, yet is not to be ignored. The variations in the amount of time the land is in condition to be worked may be due to differences in the amounts of rainfall or to differences in the character of the soil. Where there is considerable rainfall, sandy soil can be worked many more days per month than the silt loams, and either of these soils will be dry enough to work more days per month than the heavy clay soils. While this is important in determining the acres of corn or oats one man can care for, having the land dry very quickly has its drawbacks. The heavy lands may be far superior for grazing and may yield crops enough larger to compensate for the loss of time due to wet land. An ideal arrangement would be to have more than one kind of land in the same farm. In the absence of this it is very important for the farmer on heavy land to have productive labor to do when he cannot work in the field.

Location with respect to the market is important, but is involved in the question of the efficiency of the land. The farmer who can produce the most product on a given piece of land gains the most by being located near the market, whereas the farmer with low efficiency would gain least by being near the market, for two reasons: he would have less to haul to the market, and his time is worth less for other work than hauling his products.

Sanitary conditions should be given careful consideration. A farm may be worth less than nothing if its occupier is in danger of losing his health or that of the members of his family by living on the farm. The seriousness of conditions of this kind depends upon the ease with which the sanitary conditions can be improved.

The character of the neighbors is worthy of close inspection before buying a farm. The farmer cannot go it alone. He has to do with his neighbors continually in one way or another. The character of the people of a neighborhood will have much to do with the conditions of the roads, the absence or presence of noxious weeds, the cost of threshing, silo filling, and other farm work which is done coöperatively. The moral standards of the community as is evidenced by the prevalence of drunkenness, illegitimate children, and other evils on the negative side, and in terms of good schools, effective churches, and a clean social life on the positive side, should be looked into with great care. The moral standards of a community stamp themselves upon the younger generation. The older folks not in sympathy with the standards of the community may have an opportunity for doing some valuable missionary work, but unless they use rare tact they may find themselves cut loose from the life of the community as a result of their efforts.

It should never be forgotten by the farmer who is trying to buy a farm that he is buying a home as well as a place to work. His life and that of his family may be influenced more by the character of the farm and the community as a place to live than by the farm as a place to make money. The richness of farm life consists largely in things which money cannot buy.

PROBLEMS

1. If one man with a given outfit of horses, tools, and other equipment can operate 80 acres of "N" grade land with the same outfit as he can operate 100 acres of "M" grade land, which land has the greater economic capacity per acre and how much greater? (It is assumed in all questions that the factors are combined in the most profitable proportions.)

2. If ten men of "E" grade of economic capacity are required to operate a given farm, while only seven men of "G" grade economic capacity would be required, which men have the greater capacity per man? How much greater?

3. If from a given outlay for labor and equipment a given farmer can secure a product worth \$80 on "D" land and a product worth

\$70 on "C" land, which grade of land has the greater economic efficiency? How much greater than the other?

4. With given land and given equipment, farmer "A" produced \$80 worth of product; while farmer "B" could produce \$110 worth of product; which farmer has the greater economic efficiency? How much greater?

5. If a given amount of labor and equipment may be employed profitably upon 100 acres of "N" land, or upon 120 acres of "M" land, with a product of \$1200 on the "N" land or a product of \$1400 on the "M" land, which land has the greater capacity? How much greater? Which has the greater efficiency? How much greater?

6. If on the same farm cow No. 8 is kept and milked at an annual cost of \$45, while cow No. 9 is kept and milked at a cost of \$60, and cow No. 8 yields a product worth \$54, while cow No. 9 yields a product worth \$72, which cow has the greater capacity? Which the greater efficiency? How much greater?

7. Plow "A" requires 2 horses and one man and will plow 2 acres a day. Plow "B" requires four horses and one man and will plow 3½ acres a day. Compare the capacity and the efficiency of these plows in terms of men and of horses.

8. Workman "A" can pitch grain for 3 wagons in threshing, while workman "B" can keep but two wagons going, and each of "A's" three wagons hauls 30 per cent more grain in a day; but in harvesting grain, "B" was able to drive five horses to an eight-foot binder, while "A" was unable to drive more than a three-horse team to a six-foot cut binder, and while "B" cut 15 acres of grain "A" cut only 10 acres per day. Explain where each has the greater capacity and where each has the greater efficiency.

CHAPTER XIII

THE PROPORTIONS OF THE FACTORS OF PRODUCTION

The law of variable proportions. In the production of a given crop, like corn, all the factors of production, land, labor, and equipment, are brought into play; but there is no definite proportion in which they must of necessity be combined in order to bring the corn crop into existence. The quantity of corn produced on a given area of land will be greatly influenced, however, by the amount of labor and equipment associated with the land.

The law of increasing and diminishing returns operates when increasing amounts of labor and equipment are associated with or applied to a given area of land. A small amount of labor and equipment per acre may yield 20 bushels of corn to the acre, double the amount may produce 45 bushels per acre, whereas three times the amount may produce only 58 bushels per acre. In the first instance the law operates to give increasing returns, in the second, diminishing returns.

At any given time and place there is a certain proportion in which the factors combine most profitably. If less or more than a certain amount of labor and equipment be associated with a given area, the profits will be less than they should be. The proportion which is right for one farm at a given time may be wrong for another. This may be due to differences in the physical and biological character of the land or to differences in location with respect to the market. Also it is true that the adjustment of proportions which yield maximum profits on a given farm at one time may be wrong at another time on the same farm. This will result when there is a change in the relative costs of the factors of production.

Changes in the relative abundance of the factors of production, resulting in changes in their relative cost to the producer, arise out of differences in the rates of increase of the supply of land, labor, and equipment. If the land supply increases less rapidly than labor and equipment, land will become relatively more valuable and should be used more sparingly. As a matter of fact, there was a period in the past century when the area in farms was increasing more rapidly than the number of farmers. This was due to the settlement of the prairies aided by railway transportation. During this period the tendency was to use more land per man and the great scarcity of men in the presence of such large supplies of good land stimulated the invention of machinery of every sort to enable man to associate himself with more land. In recent years the supply of land is increasing less rapidly and there is every reason for believing that in the future the more rapidly increasing supplies of men and equipment in agriculture will demand that land be cultivated more and more intensively. This implies that the farmers will need to be alert on the question of intensity of culture.

While the question of right proportions, of which intensity of culture is one phase, involves all the factors equally, it has been common to center the discussion about the utilization of land. This has grown out of the feeling that land is usually the more slowly increasing factor, and must be used more intensively as the years go by. Hence, *intensity of culture becomes the central problem in the study of the proportions of the factors*, though the proportion between men and equipment is also important and has been changing rapidly in the past century.

Table VII compares the increase in the acreage of improved farm land with the increase in the number of persons engaged in agriculture and the value of farm implements and machinery from 1870 to 1910. According to this table the land increased more rapidly than the workers up to the close of the 19th century, but the workers increased more rapidly than the land from 1900 to 1910. With the exception of one decade, ma-

chinery increased more rapidly than land, and in every instance more rapidly than land workers.

TABLE VII
THE RATE OF INCREASE IN WORKED LAND AND LAND WORKERS

IMPROVED LAND IN FARMS			PERSONS ENGAGED IN AGRICULTURE		VALUE OF IMPLEMENTS AND MACHINERY	
	Acres	% Increase	Number	% Increase	Total Value	% Increase
1910	478,541,750	15.4	12,567,925	21.1	1,265,149,783	68.7
1900	414,498,487	15.9	10,381,765	13.4	749,775,970	51.7
1890	357,616,755	25.6	9,148,448	18.6	494,247,467	21.6
1880	248,771,042	50.7	7,713,875	29.7	406,520,055	50.1
1870	188,921,099		5,948,561		270,913,678	
1870 to 1910		153.3		111.1		367.1

Intensity of land utilization may be viewed from various standpoints, as follows:

1. A given crop in a given year projected in advance with a view to a general estimate as to the right proportion between land area and working force.

2. A given crop at a given stage in the progress of its production with a view to maximum economy in the utilization of the operating force on a given day when there are various demands for the operating forces.

3. A given farm organization as a whole at a given time. The amount of farming of various kinds which can be done on a given area with optimum results with the understanding that the operating capital and the labor supply may be adjusted indefinitely with a view to securing maximum economy of organization for the farm as a whole.

4. The entire agriculture of a country in a given year.

The first, third, and fourth points of view may be studied historically and geographically as well as at a given time and place.

All these problems may be studied from the individual and from the social point of view.

Standpoint 1. Most of the discussion of this subject has been from standpoint 1. In the discussion of this problem, land, labor, and capital equipments are assumed to be at the disposal of a *manager* (a farmer), who is attempting to use men and equipments upon land in the proportions which will yield maximum profits for himself as the responsible party who stands the losses or secures the profits. The problem of how much land, labor, and equipment he should operate is another question of proportions which will be considered in the chapter on the size of farms.

To illustrate the economic principles underlying the proper degree of intensity of culture on a given farm in the production of a given crop, let us first suppose that the farmer can get as much land of a given grade as he may want to use, without paying anything for its use. Under such circumstances, how many composite units made up of laborers and capital-goods should be associated with an acre of land? For the purpose of this illustration let us assume a small composite unit, the use of which costs the farmer one dollar. It is obvious that in the production of corn, for example, the application of one of these units, per acre of land, would ordinarily produce very little, if any corn at all. It is possible that the expenditure of two units would produce a small crop; but then the third unit would increase the product more than the second, the fourth more than the third, and so on until a point of stationary returns has been reached, after which the succeeding units may be said to continue for a time to add less and less to the total product, until a point may be reached where further applications would add nothing to the total product. *Thus in agricultural production the returns to succeeding composite units made up of laborers and equipments may be said to follow the law of increasing returns until a point of stationary returns has been reached, after which the law of diminishing returns per succeeding unit commences to operate.*

This may be illustrated by means of a diagram. In Fig. 7 the composite units of labor and capital-goods applied to a given

such a result. There are at present no data from which to calculate the exact curve which the returns per succeeding unit will follow, but the general rise followed by a general fall is a matter of common observation.

With this illustration (Fig. 7) before us, suppose the farmer has one thousand of these composite units, made up of laborers and capital-goods, to expend in agricultural production. In other words, suppose that this farmer has found that he can secure the largest net profit when he operates just one thousand of these units of labor and capital-goods. With free land at his disposal, how many acres will he use and how many units will he employ upon each acre? Will he apply five units per acre and use two hundred acres of land? No, his expenditures will produce a greater total product when he employs six units per acre and confines himself to one hundred and sixty-six and two-thirds acres. But will this make the labor and capital-goods *most* productive? On first thought one might answer yes, because the seventh unit adds less to the product than the sixth; but upon looking more closely into the matter, it is apparent that there is no good reason for ceasing to apply more units simply because the point of diminishing returns per succeeding unit has been reached. The seventh unit may add less to the total product than the sixth, and yet add more than any of the first four units, and the *average* product per unit may be greater when seven units have been applied than when only six have been expended. Hence the total product of the thousand units may be greater when seven units have been applied to each acre and only one hundred and forty-three acres of land employed. But at what point should the farmer cease to increase his applications per acre of land? It is obvious that there is a limit, that, for example, a thousand units expended upon one acre of land in the production of Indian corn would yield a smaller return per unit than when more land is used and the number of units applied to each acre is more limited. But what is the limit? It is true that in the case before us the sixth unit increases the total product more than any unit before or after it, but *all units cannot be sixth units*. The first, the second,

and the third are indispensable; and, in case a farmer can manage a fixed number of these composite units, made up of capital-goods and laborers, when employed in the production of a given crop without reference to the area on which they are employed, the *highest average return per unit* is the thing which he should seek, for with a fixed cost per composite unit this will enable him to secure the largest net profit per composite unit, consistent with the proper intensity of management, and hence will enable him to secure the maximum total net profit for his exertion.

In the illustration (Fig. 7) the average product per unit curve AP is represented as increasing rapidly until the sixth unit has been applied and then less rapidly until a point is reached where the return per increment is just equal to the average. At this point the average return per unit reaches the maximum, and the application of another increment would reduce the average product per unit employed. The thousand composite units are used in the most economical manner when the acreage is so limited that the number of units applied to each acre is just sufficient to yield the maximum average return per unit. For example, the highest average return would be gained by the application of X units in the case before us in Fig. 7, where the location of X is determined by the fact that the rectangle $AVX'X$ is drawn in such a manner that its area equals the area $AI'X'X$, which represents the total product of X composite units of the two factors laborers and capital-goods. That part of the rectangle lying between the line HH' and the line II' , for example, represents the average return per unit. Had the applications stopped at I , after the application of but six units, the total product would be represented by the area $AI'I$, or the rectangle $AWN'I$, and the average return per unit would have been less. Likewise had the applications been increased to nine units, the average return per unit would have fallen. Hence a curve of increasing and diminishing *average returns* may be drawn, based upon the increasing and diminishing returns of the successive composite units of labor and capital-goods. This curve of averages is repre-

sented by line $AX'P$ (Fig. 7), which is so drawn that it will pass through the upper right-hand corner of any rectangle which has AC , AD , AE , etc., or any part thereof, as a base and which incloses an area equal to the area $AC'C$, $AD'D$, $AE'E$, etc., respectively, as rectangles $AWNI$ and $AVX'X$ have been drawn in Fig. 7.

As illustrated in Fig. 7, the curve of averages reaches the highest point at X' and the highest average product per unit is gained by employing seven and two-fifths units per acre, and it will be seen at once that, since all the charges which must be deducted are a fixed amount per composite unit of labor and capital-goods applied, the higher the average return per unit, the greater will be the farmer's net profit per composite unit, and under the assumption that, in the production of a given crop, the same amount of managerial activity is required per composite unit without regard to the area of the land on which it is employed, and when there is no rent to pay, the applications should increase until the point of maximum average returns per unit is reached. This is the most extensive agriculture that is consistent with the greatest net profit to the farmer under any circumstances, in the production of a given crop; and, under the above assumption as to demands upon managerial activity, it is the most intensive that is in accord with the farmer's highest economic interest, where the use of land may be had free.

It has been said¹ that the intensity of culture should be increased until the final increment adds no more to the total product than enough to cover the cost of that unit. If, in Fig. 7, for example, the value of the product represented by a rectangle whose sides are KL and LL' equals the cost of securing the use of a composite unit, the applications should, according to this view, be increased just to point L . It is true that this would enable the farmer to secure the largest net profit per acre of land, but unless he be a marginal farmer, in which case the two statements coincide, it would reduce his net profit per composite unit of the other factors. If the farmer were able

¹ T. N. Carver, "The Distribution of Wealth," p. 80.

to operate a given number of acres of land without regard to the degree of intensity of culture, then it would be desirable to secure the largest net profit per acre; but if he can, to advantage, manage only a given number of units of labor and equipment, regardless of the area on which it is expended, then he should seek the largest net profit per unit of these factors.

TABLE VIII

ILLUSTRATING DIFFERENCES IN TWO METHODS OF ASCERTAINING THE PROPER DEGREE OF INTENSITY OF CULTURE

1 ANNUAL EXPENSE PER ACRE FOR LABOR AND EQUIP- MENT	2 VALUE OF PROD- UCT SECURED BY—		3 INCREMENT OF PRODUCT DUE TO \$.50 INCRE- MENT OF EX- PENDITURE		4 GROSS RETURN PER \$1.00 OF EXPENDITURE FOR LABOR AND EQUIPMENT		5 NET RETURN PER \$1.00 OF EXPENDITURE (\$5.00 RENT SUBTRACTED)	
	A	B	A	B	A	B	A	B
5.00	7.50	5.6 $\frac{1}{2}$	5.00	3.75	1.50	1.12	.50	.125
7.50	13.50	10.1 $\frac{1}{4}$	6.00	4.5	1.80	1.35	1.13	.68
10.00	19.00	14.25	5.50	4.1+	1.90	1.425	1.40	.925
12.50	23.27	17.45	4.27	3.20	1.866	1.396	1.46	.99
15.00	27.07	20.30	3.80	2.85	1.805	1.35+	1.47	1.02
17.50	29.60	22.20	2.53	1.90	1.69	1.26+	1.41	.98
20.00	31.00	23.25	1.40	1.05	1.55	1.16+	1.30	.912

Table VIII is intended to show the difference in the degree of intensity of culture resulting from the application of the two competing theories of intensity of culture. The assumption here is that two men, A and B, are farming the same grade of land, but that while A is a superior farmer, B is a marginal farmer. Column three illustrates the degree of intensity carried to the point where the product of the last increment most nearly approximates the cost. According to this theory there is more intensive application of labor and capital by A than by B. Farmer A could have made more profit by stopping at an earlier point and using a proportionate amount of additional land with the additional labor and capital. Column

four shows the point of maximum average gross returns which would yield maximum return per unit of outlay where no rent had to be paid. Column five shows the net return per dollar of expenditure after deducting a five dollar rent. It will be noted that the payment of rent tends to force the intensity of culture to a much higher point. Note also that the degree of intensity for farmer B is the same in columns three and five; whereas the superior farmer would act in one way if he followed the first theory and in another way if he followed the second theory.

It may be well at this point to devote a few lines to the assumption, that, within the limits of the variations in intensity of culture which is likely to exist in the production of a given crop, the same amount of managerial activity is required per composite unit composed of the two factors, laborers and equipment, without regard to the area of the land on which it is employed.

In general, we believe this assumption to be very near the truth. In the production of corn, for example, the amount of managerial activity required for each laborer with the team and tools which are used by him would be the same whether thirty acres of the crop were cultivated three times, or the same laborer and capital-goods were used in cultivating twenty-two and one-half acres of corn four times. Certainly if one must choose between this assumption and the assumption that the same amount of managerial activity is required for each acre of land, regardless of the intensity of culture, there is little question as to the choice. It is doubtless true that one man can superintend the operations of more laborers and capital-goods when they are brought together under one roof as in a large manufacturing plant than when they are distributed over a vast area of land; but on the farm and in the production of a given crop we believe that, as a rule, the demand upon the time and energy of the manager, per composite unit of the two factors, laborers and capital-goods, will remain practically the same regardless of the area on which such unit is expended. We shall proceed, therefore, upon this assumption in our attempt to

ascertain the degree of intensity of culture which is most economical where land has acquired value so that payment must be made for its use.

When a fixed sum per acre must be paid for its use, land should be cultivated more intensively than when it could be had free. Suppose, for example, that three dollars per acre must be paid for the use of land. We may think of this rent as taking all of the product of the first four and one-half, or R composite units, of the factors applied (Fig. 7). In this discussion we shall speak of that share of the product which is left after paying the rent, as a *net return*. The farmer may be said to receive no net return from his expenditures until the rent is paid. Should he cease his applications when R units have been employed, the product would just pay the rent and he would lose the cost of the labor and equipment, besides receiving nothing for his trouble. Whatever he produces by further applications is the fund which gives rise to the net profits after the wages of hired laborers and the payment for the use of capital-goods have been withdrawn.

When there is no rent to pay, the farmer seeks the highest average *gross* return per unit of expenditure; but, where a fixed rent must be paid, he no longer seeks the highest average *gross* return, but the highest average *net* return per unit, for, under the assumption that, in the production of a given crop, the amount of managerial activity per composite unit of laborers and capital-goods remains the same regardless of the area on which it is expended, the *largest net return* per composite unit of these factors will enable the farmer to secure the largest net profit per unit of managerial activity put forth, and this is the goal in agricultural production when viewed from the standpoint of the farmer.

The average net return per unit follows the law of increasing and diminishing returns in the same manner as the average gross return; but, when a fixed rent is paid, the line of increasing average net return starts at point R (Fig. 7); for all of the product up to point R is required to pay the rent, and the average *net* return at that point is zero. After the application of five

units the average net return per unit will be represented by one-fifth of the area $RR'H'H$; for the total return minus the rent is represented by the area $RR'H'H$, and since five units have been applied this net return must be divided by five to find the average. Likewise after the application of the sixth unit, it will be one-sixth of the area $RR'I'I$. After the application of the seventh unit, the average will be one-seventh of the area $RR'K'K$. Thus the line of average net returns (line $RY'P'$ in Fig. 7) rises rapidly until the line II' is crossed, after which it rises less rapidly until it crosses the line $I'B$, after which it falls. When a fixed rent is paid, the line of average net returns can never rise so high as the line of average gross returns, and the point Y' , where the line of average net returns reaches its maximum distance from the base line AB , will always be farther to the right than point X' ; and hence the highest average net return per composite unit of labor and capital-goods employed on land for which a fixed rent must be paid will be gained by a more intensive culture than when the same land could be had rent free.

When the farmer follows the rule of seeking the largest net profit for his exertion, the degree of intensity of culture on a given piece of land and in the production of a given crop will vary with the amount of the fixed rent which is paid for its use, — the greater the amount of rent, the higher the degree of intensity, for when a higher rent must be paid for the use of the land a more intensive culture is necessary if the highest average net return is to be secured.

If the proposition is reversed and we think of successive increments of land being brought under a given number of composite units of the other factors, the simple statement will suffice that the amount of land should be increased until the final increment of land adds just enough to the total product to pay the cost of securing the use of the land.¹ It will readily be seen that this would result in the degree of intensity of culture which will yield the largest net return per composite unit of the other factors. On the assumption, therefore, that one

¹ See "The Distribution of Wealth," by T. N. Carver, pp. 80-83.

farmer can manage a given number of the composite units of labor and capital-goods without regard to the area on which it is expended, the same conclusion will be arrived at with regard to the proper degree of intensity of culture where land can be had free or where a fixed rent must be paid for its use, whether one adds successive units of the other factors to a given area of land until the average net return per unit reaches the maximum, or whether one adds successive acres of land to a given number of the composite units of the other factors until the final increment of land adds just enough to the total product to pay the fixed rent which must be paid to secure the use of said increment of land.

The conditions are practically the same where the farmer owns the land which he cultivates as where he pays a fixed rent, the only difference being that he has paid for the perpetual use of the land, whereas the tenant pays annually for its use.

The payment of a share rent does not tend to increase the intensity of culture. The share rent increases as the total product increases; and it may be thought of as taking some fixed portion, say one-third, of the product of each succeeding unit of labor and capital-goods applied, so that the farmer gets only two-thirds of the product of each unit, and his share reaches the highest average return per unit with the same degree of intensity which yields the highest average gross return per unit. Hence, where the share tenants follow their own self-interest, they will farm no more intensively on the best land when less productive grades of land have been resorted to than when only the best grade was cultivated.

To illustrate this point, draw a curved line from *A* to *B* in Fig. 8, at such a distance from lines *AI'B* and *AB* as to leave two-thirds of the area of each section between the lines *AB* and *AIB*. Then draw a line through the points of average net returns per unit employed, in the same way as the line of average gross returns was drawn. This new line of averages will reach the line of maximum net returns per unit when the line *AZP'* crosses the line *AIB*. The point *Z* will be one-third of the distance from *X'* to *X* and neither to the right nor to the left

This means that the point of maximum net returns is reached, in the case of a share tenant, with the application of the same number of units which yield the largest average gross product.

Other things remaining the same, how will a change in wages and interest influence the intensity of culture? Suppose that wages and interest fall twenty per cent; will it then pay the farmer to invest more units per acre? If the rent should remain the same as before the reduction in wages and interest, and if the foregoing reasoning with regard to the proper intensity of culture be true, the degree of intensity in terms of

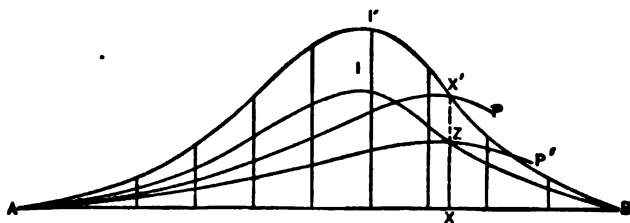


FIGURE 8

quantities of labor and capital-goods which would yield the largest net return would not change; but the expenditure per acre in value would be decreased and the profits of the farmer would be increased in the same proportion. This higher profit might increase the demand for land, however, and this would likely result in a rise in rents, after which it would pay to increase the quantity of labor and capital-goods employed, excepting in the case of the share tenant.

The influence of a rise or fall in the price for which the product can be sold will influence the degree of intensity only as it may affect the amount of rent which must be paid for the use of land. As prices rise the rent tends to rise and the degree of intensity should be increased, while the reverse is true in the case of falling prices. This is true because land of a given degree of productivity is limited, and as labor and capital-goods increase in quantity, land of a less productive grade must be resorted to, and without improvements this is possible only when wages and interest fall or prices rise. But there is a close relation between

the gross return which the marginal land will yield and the amount of wages and interest which labor and capital-goods can command on other grades of land. This means, of course, that as the less productive lands are resorted to the rent which the competitors will offer for the better land will rise, and then the largest net return, and hence the largest net profit per composite unit of labor and capital-goods, can be gotten only by more intensive culture.

In this connection the influence of lower wages and lower interest and higher rents, upon the choice of crops, should be reviewed, because it often happens that a rise in rents will result in the change from a crop which requires but little expenditure for labor and capital-goods per acre to one that requires large expenditures per acre.

That degree of intensity of culture which brings the largest net profit to the landowning farmer or to the tenant who has a fixed rent to pay seems also to be that degree of intensity which makes the total amount of land, labor, capital-goods, and managerial activity employed in the agricultural industry most productive. It appears, therefore, that at this point there is a harmony of interests between the individual and society as a whole; but it would seem that the interest of the share tenant is not in harmony with the interest of society as a whole in this regard, for if the better grades of land are farmed as extensively as the interest of the share tenant seems to dictate, poorer grades of land would need to be used in order that the labor and capital-goods of the country be employed, and some of this labor and equipment on the marginal land would be creating a smaller product than it could be made to yield if employed in farming the better grades of land to a more intensive degree; and, therefore, while a given share tenant could increase his net profit by this extensive culture, such culture would reduce the total value of the agricultural productions of the country as a whole.

The interest of the share tenant is also out of harmony with that of the landlord in this regard. Since it is to the interest of the landlord that the share which accrues to him as rent

shall be as large as possible, he may desire that the intensity of culture be carried to the farthest extreme. So long as an increment of expenditure will add anything to the product it might seem to his interest to have the increment applied, for it would add to his income. Thus, stated in its extreme form, it would seem that while the share tenant would desire to farm so extensively that the average gross return per unit of labor and capital would reach the maximum, the landlord might desire that the gross return per acre should reach its absolute maximum, without regard to cost per unit of the product.

It is evident that the interest of the landlord as well as that of the share tenant is here in conflict with the interest of society as a whole; for to follow what seems to be the landlord's highest economic interest in this particular would result in the reduction of the total agricultural product which could be produced with a given amount of social energy.

But it becomes apparent that the landlord will always be unable to induce his share tenant to farm any more intensively than an owner of land or a tenant with a fixed rent finds it to his interest to farm his land, for the tenant could otherwise do better by paying a cash rent or by taking up new land of nominal value. On the other hand, the share tenants are, in the United States, quite generally under the direct supervision of the owners of the land, who insist that the share tenant should farm as well as the owners would do. It may be true that this ideal is not often perfectly attained, and yet the tendency is for the landlord to so bring his influence to bear upon the share tenant that the social loss due to share tenancy is, perhaps, not very great.

In fact the advice of a landlord who himself is a successful farmer often results in an important increase in the product of the farm to the benefit not only of the landlord and the tenant who shares the profits, but to the consumer of the goods.

Standpoint 2. We have here the more immediate problem of determining the proper intensity of culture at a given stage in the process of producing the crop. This depends largely upon the exigencies of the weather. The farm manager cannot tell in

advance the extent to which corn cultivation and clover harvest will conflict; neither can he know exactly how much time there will be for field work. Having made his general plan for the year, he must, from day to day and week to week, distribute his labor where it will count for most. If more labor can be got temporarily, that will be distributed on the same basis, *i.e.* put in where it will count for most. Under these conditions the area has already been determined, but unusual weather conditions may put the farmer ahead or behind his regular schedule. In either case the correct policy is to make such use of the available resources as will add most to the total profit of the farm regardless of the assumptions made in projecting the plans at the beginning of the year. Plans are valuable but emergencies often demand their readjustment.

Standpoint 3. The problem as it confronts the farmer in action is found in standpoint 3. How can the amount of business under a given farm organization be increased, *i.e.* how can the gross income be increased in such a manner as will add most to the farmer's net profit? Take a dairy farm, for example, where the sale of whole milk is the principal source of income. To increase the gross income means essentially to increase the milk check. (1) The milk check can be increased by improving the sanitary quality of the milk so as to secure a higher price for the product. This requires greater expenditure for labor in the dairy and on the milk route, but makes no increased demand for feed or land. (2) The milk check may be increased by producing a greater quantity of milk of the same quality. This may be done by:

A. Securing cows of greater efficiency and capacity. This increases the investment in cows and makes some change in the demand for feed, which may be produced as a result of more labor on the farm on the same area or the feed may be purchased.

B. Securing more of the same quality cows, building greater barns, hiring more laborers, buying or raising more feed.

Which of these things to do depends on relative costs. If more feed is raised it can be done by more intensive culture or

by expansion to a greater area. Intensity of culture and the area of the farm are in a real sense reciprocals.

Standpoint 4. Intensity of culture may be viewed from the standpoint of the entire agriculture of a country. When viewed in a given-year there is found a very wide range in the degrees of intensity in the different parts of the country. On the cheap marginal lands the expenditure per acre is small and the farming is said to be *extensive*, while on the high-priced lands near the markets, the expenditure per acre is large and the farming is said to be *intensive*. This difference may be due to the application of more labor and capital to a given kind of production or to the production on the higher-priced land of crops which require (under any condition) very much more labor and capital per acre. For example, market gardening is much more intensive than wheat growing and is usually found on higher-priced land near the market.

Likewise, when the whole country is viewed geographically it is found that certain kinds of land are farmed more intensively than others because of the character of the soil, more labor and capital being required to yield optimum results on certain kinds of land than on other kinds of land. This simply means that the capacity of certain kinds of land is higher than that of other land, due to differences in the physical properties of the land.

Viewed historically, an increase in intensity in the utilization of land is the result of a relative increase in the population. On the other hand, a decrease in population or an increase in the available agricultural land supply will make a more extensive culture desirable, unless improvements in equipments are such as to make possible the greater use of machinery, so that, while the application of human labor is less per acre, this may be counteracted by the use of more capital per acre, and in this way maintain or increase the intensity of culture as a basis of a greater per capita consumption.

The proportions of laborers and equipments. In farm organization it often happens that a fixed number of laborers must be combined with certain equipments; for example, one man is required for each self-binder; but in many cases it may be a

matter of indifference, aside from the element of profit, whether the work be done by hand or by horse power and machinery. In the production of wheat, for example, the proportion of capital-goods might be reduced and the same produce obtained by increasing the number of laborers. The reverse is also true. But while these variations may be made arbitrarily they have an influence upon the amount of the farmer's share of the product. Of all the various operations necessary to produce and market a bushel of wheat, some can be performed more cheaply by the use of horses and machines, others by means of laborers without horse power.

Where the farmer's aim is to have the net profit which is left after paying the hired laborers and paying for the use of the equipments as large as possible, every operation should be performed by laborers, if this method will lower the costs of production, increase the product, or in any other way increase the net profits; and everything should be done by means of horses and machines or other forms of equipments, which can be done to better advantage in that way. It may often happen that the cost of performing certain farm operations can be reduced by the use of horses and machinery in the place of laborers, but it may at the same time happen that the product resulting from these operations is also reduced. It is not always true, therefore, that every operation should be performed in the least expensive manner, in fact, it may easily happen that a more expensive method will result in the largest net profit.

One point never to be overlooked in considering the desirability of substituting laborers for equipments or vice versa, is *the relative demand which will be made upon the time and energy of the manager*. Any change in the proportions of these factors in the composite unit which will increase the amount of managerial activity per such unit must sufficiently increase the farmers' net profit per composite unit to balance the loss which results from the fact that fewer units can be brought under a given amount of managerial activity.

One consideration which favors choosing machinery rather

than laborers as a means of accomplishing a given result is the greater control over equipments. In case of great demands for workers in other localities, laborers may leave the farmer with his crops in the fields, whereas the horses and machines are certain to be at the farmer's disposal when he wants them. Laborers can make themselves more valuable by becoming more dependable.

Where the substitution of the one factor for the other makes no change either in the quantity of the product or in the amount of managerial activity required, the rule is a simple one: where there is a choice between using laborers or capital-goods in the performance of certain operations, choose the cheaper method. And yet, the qualifying phrases in this formula are so important that the problem is far from being a simple one, and in many cases, perhaps in most cases, it is the more fundamental principle of seeking the largest net profit per unit of managerial activity which must be kept uppermost in mind.

A change in the rate of wages without a corresponding change in the cost of equipments, or vice versa, will necessitate a readjustment of the relative amounts invested in the employment of laborers and in the employment of equipment. As wages rise relatively to interest and depreciation charges on equipment, there should be less labor and more capital-goods employed. Improvement in machinery often makes it profitable to substitute capital-goods for laborers. The self-binder, the hay-loader, and the windmill are examples where this has been true.

PROBLEMS

1. Suppose a farmer who operates his own farm with his own labor finds that by putting all the time he can upon a corn crop he can grow:

60 acres of corn yielding 24 bu. per acre
 50 acres of corn yielding 30 bu. per acre
 45 acres of corn yielding 33 bu. per acre
 40 acres of corn yielding 36 bu. per acre
 35 acres of corn yielding 40 bu. per acre
 30 acres of corn yielding 44 bu. per acre

Which combination will be most profitable if the land is rent free? If a rent of 10 bu. per acre must be paid? If one-half of the crop must be paid as rent?

2. To illustrate and compare the two points of view on the proper degree of intensity of culture in a given year on a given grade of land and in the production of a given crop, let the following figures represent the returns resulting from the varying expenditures per acre:

DOLLARS PER ACRE	BUSHEL PER ACRE IN FIELD A	BUSHEL PER ACRE IN FIELD B
1	0	0
2	0	2
3	0	6
4	0	15
5	10	28
6	25	37
7	38	42
8	48	46
8.2	49.1	46.6
8.4	50.2	47.1
8.6	51.3	47.5
8.8	52.3	47.8
9.0	53.2	48.0
9.2	54.1	48.2
9.4	54.9	48.4
9.6	55.7	48.6
9.8	56.5	48.8
10.0	57.0	49.0
11.0	60.0	49.5
12.0	62.0	49.8
13.0	63.0	50.0
14.0	63.5	50.1
15	63.5	50.1

(1) Supposing that the farmer could get all the land he cared to use, rent free, either of the quality found in Field A or Field B, which kind of land would it pay him the better to use?

(2) When maize is worth 25 cents per bushel and a rent of \$2.50 per acre is charged for the land of either grade, which grade would prove the more profitable to the farmer, and to what degree of intensity should he cultivate it?

(3) In case the farmer must give one-third of the crop to the landlord, as rent, to what degree of intensity would he farm each of the

fields, A and B, if he followed his own highest economic interest? To what degree of intensity if he followed the highest economic interest of the landlord? Explain fully how society as a whole would lose in either case.

(4) When maize is worth 35 cents per bushel and the rent which must be paid for the use of the land in Field A is \$5.00 per acre, what is the highest rent which the farmer could afford to pay for the use of the land in Field B?

(5) How would a rise of 20 per cent in the cost of labor and capital-goods affect the above problems?

(6) How would the second problem (2) be affected if the price of corn should rise to 40 cents per bushel and the rent should at the same time rise to \$4.00?

(7) How would problem three (3) be affected if the landlord should agree to take twelve and one-half bushels of maize per acre instead of one-third of the crop?

3. In order to ascertain the optimum amount of acid phosphate to put upon a corn field which is known to lack phosphate, the following varying quantities were applied per acre with the corresponding results:

50 lb.	yielded an increase of	2	bushels per acre
100 lb.	yielded an increase of	5	bushels per acre
150 lb.	yielded an increase of	7½	bushels per acre
200 lb.	yielded an increase of	9½	bushels per acre
250 lb.	yielded an increase of	11	bushels per acre
300 lb.	yielded an increase of	12	bushels per acre
350 lb.	yielded an increase of	12½	bushels per acre
400 lb.	yielded an increase of	12½	bushels per acre

The cost of the fertilizer is 1 cent per lb., to be paid for when corn is in crib.

The cost of application is 50 cents per acre.

The cost of gathering corn is 3 cents per bushel.

The value of corn in the crib is 63 cents per bushel.

Determine optimum application of acid phosphate.

CHAPTER XIV

THE SIZE OF FARMS

THE size of farms is usually measured in terms of area. It is obvious that all land is not equally useful and that some uses of land make very different demands for labor and capital per acre than others. From certain points of view, a 20-acre fruit and vegetable farm may represent as much business as a thousand-acre wheat farm. There are many measures which might be used. For example, the total investment, the number of laborers, the number of horses used, the number of cows milked, the number of cattle and hogs fattened, or the number of sheep on a sheep ranch, may give a more accurate basis of judging of the importance of a given farm than a bare statement of area. Area is, however, common to all farms, and next to the number of persons employed, is perhaps the most satisfactory starting point for the discussion of the size of farms.

The farms of the United States have been classified for statistical purposes into ten size-groups based upon area. The table on the following page shows the number and percentage of the farms found in each size-group in 1910.

This table shows a wide range in the size of farms in the United States in 1910. A study of the tables in the census volumes shows that this is a condition of long standing. A study of conditions in foreign countries shows the same wide range in the size of farms. It would seem, therefore, that there is no one size of farm which can be generally recommended, but that the proper size for a given farm depends upon many variable conditions. It becomes a matter of importance, therefore, to outline the principles which determine the size of farms, with a view to the proper adjustment of the size in the case of each individual farmer.

TABLE IX

FARMS IN THE UNITED STATES CLASSIFIED BY AREA, 1910

	NUMBER	PERCENTAGE
Under 3 acres	18,033	0.3
3 to 9 acres	317,010	5.0
10 to 19 acres	504,123	7.9
20 to 49 acres	1,414,376	22.2
50 to 99 acres	1,438,069	22.6
100 to 174 acres	1,516,286	23.8
175 to 259 acres	534,191	8.4
260 to 499 acres	443,984	7.0
500 to 999 acres	125,295	2.0
1000 acres and over	50,135	0.8
All farms	6,361,502	100.0

While there is no one proper size for farms in general, there is always a proper size of farm for a given man, at a given stage of his own development, on a given type of soil, in a given line of production, with given labor and market conditions. In general, cotton farms are smaller than wheat farms. For example, the average area of improved land in farms in Bell County, Texas, where more than half the improved land is in cotton, was about 70 acres in 1910, whereas the average was about 270 acres in Barton County, Kansas, where more than half the improved land was in wheat. If Washington County, Mississippi, is compared with Cass County, North Dakota, the contrast is even more striking. In the former county, the average area of improved land in farms is 23 acres; in the latter it is about 470. In the Mississippi county, over 47 per cent of the improved land was in cotton, while in the Dakota county 44 per cent was in wheat.

These facts indicate that the crop grown is a factor in determining the size of farms; but that this force is not operating alone is shown by the wide range in the size of wheat farms and of cotton farms. In general, the cotton farms of the black prairie of Texas are larger than the cotton farms of the Yazoo delta in Mississippi, as is indicated by the counties compared

above. In Bell County, Texas, more than 96 per cent of the farmers are white, whereas in Washington County, Mississippi, over 95 per cent of the farmers are colored. As has been noted, the improved area per farm is three times as great in the former as in the latter. This gives a strong suggestion that the capacity of the individual farmers is a potent factor in determining the size of farms.

In 1900, farms were classified by size and by principal sources of income. The statistics show a wide range in the size of farms used for any one purpose; for example, there were cotton farms in every size group from under 3 acres to over a thousand acres, but the most common size was from 20 to 50 acres. Hay and grain farms showed also a wide range, but the most common size was from 100 to 175 acres. Live stock and dairy farms were most largely in the group ranging from 50 to 175 acres. The most common size of fruit and vegetable farms was from 20 to 50 acres. Thus, while there is a wide range in sizes of farms in a given line of production, the dominant size varies with the kind of agriculture carried on.

Topography is a factor in determining the size of farms. In a broken country where the fields are small because of the limited areas of plow land found lying together, and where large machines cannot be used to advantage because of the unevenness of the ground, the cultivated area in farms is usually small. This same condition may result in large farms for grazing purposes.

The climate influences the size of farms in many ways. In California, where the wheat crop can be left standing for some time after it is ripe, a given crew can harvest a much larger area of wheat than in the more humid regions where the crop must be cared for in a few days.

The number of days per week the land is dry enough to work, during the season when crops are being put in and cared for, is an important factor in determining how many acres of each crop can be handled per man and team, and hence how large an acreage of improved land will be found per farm.

The character of the farm work influences the size of the

unit of organization. The large area demanded per man gives rise to two conditions which point toward the economy of a relatively small unit of organization when compared with many lines of manufacture. The distance which workmen must travel in going to and from their work is against large farms. The time required in going to and coming from the fields is subtracted from the time devoted to the field work. Furthermore, the fact that the work is spread over a wide area makes close supervision of the workmen impracticable. Every workman on a farm must be interested and largely self-directive in carrying out the day's work if the farm is to prove profitable. This has resulted in the major portion of the work on most farms being done by the farmer and his family.

It has been said, "The typical American farm is a family-farm." Limiting this statement to America is unnecessary. The statement is equally true of France and of Germany. If the farms of the whole world were considered, it would still be true that the typical farm is a family-farm. The world over, farming is very generally organized in accordance with what has been called the "domestic system" in industry. There has been talk about the "factory farm" and corporation farming, but nothing of general economic importance has been developed along this line. The family-farm is, for the present at least, the farm to keep in mind in studying the economic problems of the farm manager. Hence the working force of the family is an important consideration in deciding upon the proper size of farm for a given farmer.

The fact that adding to the size of the farm adds to the work in the home and detracts from the pleasure of living, tends to limit the size of farms. The farmer considers the extra work for his wife involved in taking an extra man into the home. The writer uses the word "home" advisedly. The hired man is not satisfied simply to eat and sleep in the house. He expects to be made to feel at home, and if he does not feel at home, he will move along and try another place. The farmer and his hired man work side by side in the field, and in the barn; they sit side by side at the table, and it is per-

fectly natural that the employee should expect to be considered a part of the family.

The size of the farm often grows with the family. As the boys become able to help on the farm, the successful farmer adds to its size with a view to having enough land for his labor force, and with a view to having a piece of land for each of the boys when they have grown up and want to commence farming for themselves. Under these circumstances, the splitting up of the farm as the boys start in on their own account often results in a reduction in the size of the farm as the family is dispersed.

How will the decline in the size of the American farm family affect the size of farms? In the first place, it will not only reduce the number of family workers per farm, but will tend to reduce the number of paid laborers on farms. The principal supply of satisfactory farm laborers is the boys from farm families where the degree of prosperity has not been such as to enable the farmer to expand his farm so rapidly as the family labor supply has increased. With the decline in the size of families, this source of labor is greatly reduced, and the laborers who can be drawn from other sources are not so satisfactory from the point of view of being skilled, subject to control, and reliable. The most satisfactory solution of the farm labor problem in many parts of the United States is to reduce the size of the farm to what can be handled by the family.

There are those who would not carry this so far as to reduce the labor force below two men. "There are many farm operations that require two men, so that no matter how small the farm may be, one man cannot do all the work to good advantage." The whole question involved here is: will the advantage of having another man right at hand for doing the two-man jobs counterbalance the social and economic burden of keeping him all the time? The answer to this question depends upon: (1) the managerial ability of the farmer in making a margin of profit on hired labor, (2) his tact in handling men so as to prevent the hired man from being a nuisance in the home, (3) the possibility of hiring a married man who is efficient,

and whose family does not detract too much from the well-being of the neighborhood (an effective man married to an effective woman usually operates on his own account very soon, and cannot be had on the wage basis), (4) the possibility of two single-handed farmers arranging to help each other on the tasks requiring two men.

Economy in the utilization of machinery. "Most of the common farm machinery can be used to do the work on a 200- or 300-acre farm, as well as on a small farm."¹ There is truth in this statement so far as certain types of machines are concerned. In the production of corn, no very expensive machinery is used unless a corn binder is used. Plows can be had of varying capacity from one horse to the great tractor plows. In the production of small grain, the binder is the one machine usually owned by the farmer which costs over one hundred dollars, and in humid regions and on rich land, the acreage to be cut by one machine cannot be expanded much beyond what two men can put in without the risk of losing a part of the crop. The two single-handed farmers will find it profitable to own a binder jointly and work together in grain harvest. The question always arises, "Will the greater degree of utilization of a given machine compensate for the other disadvantages involved in increasing the size of the farm?"

This leads to a discussion of the *unit of organization* on the farm. On the great wheat fields in California, the unit may be based upon the combined harvester and thresher. This machine, the crew to operate it, and the land, men, horses, and other equipment required to raise that amount of wheat which can be cut during the normal harvest period, may here make up the unit of organization. In the corn belt of central Illinois, where corn is the principal source of income, one man and team of from two to four horses, a plow, a harrow, a corn planter, a corn cultivator suited to the horse power decided upon, becomes the basic unit of organization. This same unit, with the addition of a grain seeder, a binder, and a mower, will care for oats and hay in combined amounts equal to the area

¹ G. F. Warren, "Farm Management," p. 257.

of corn handled. The area of corn which this one man and equipment can prepare the land for, plant, and keep clean the month after planting, plus the amount of land used for subsidiary purposes, becomes the unit of economical farm organization. One or many of these units may make up a given farm, depending upon the managerial ability of the farmer, the conditions in the household, and the size of the family labor force. In the corn belt, a farm which will not employ one unit is clearly too small. To be of proper size, the farm should make demand for one, two, three, or more of these units, but should not fall halfway between. A farm which is too large for one man, and too small for two, cannot be economically organized for corn production.

In the dairy regions where milk or cream is the principal source of income, one man and the number of cows he can milk and produce hay and silage for, becomes the unit of organization. While the unit for any given type of farming varies greatly in land-using power from place to place, and from man to man, the dairy unit is an unusually flexible one on the family-farm, because of the possibility of using children and women in the dairy.

The significance of the unit system lies in the fact that in general the increase in the area of the farm cannot go on by small additions of an acre now and an acre then, but must be made in considerable jumps if the area is to conform to the demands of economical farm organization. The difficulty in making these jumps often results in adjusting the organization to the available area, sometimes with too high a degree of intensity of culture, sometimes with too low a degree of intensity to yield maximum profits. One method of adjusting the size of a farm is to change from one farm to another,¹ and while this is objectionable from the standpoint of the cost of moving, it is often the most practical way of adjusting the size of the farm to the ability of the farmer and his potential labor force.

The problem of right proportions between managerial activity and the other factors of production is one of the most important problems related to the size of farms. No rule can be laid down,

but it is worth while to discuss the principles underlying this problem. In applying a given amount of managerial activity to land, equipment, and laborers the law of increasing and diminishing returns must be considered. If the managerial activity is expended upon too small a farm, the profits will fail to rise to the maximum through lack of business, and if the farm is too large, the expenses will absorb too large a proportion of the income, and the profits will not be at the maximum.

This point may be illustrated by means of the following table, in which the number of composite units (a unit may be thought of in this illustration as one laborer and the amount of capital-goods and land which should be associated with him) to be associated with one unit of managerial activity (which may be thought of as the amount of such activity which one farmer wishes to devote to production) is increased seriatim from one to eight, and as a result of the increase in the number of the composite units brought under the one management, the net profit per composite unit is represented as gradually falling from \$260 to \$80, while the resulting net profit per unit of managerial activity is represented as increasing until after the fifth composite unit is added, after which it is represented as falling.

TABLE X

COMPOSITE UNITS	TOTAL OUTLAY	GROSS VALUE OF PRODUCT	NET PROFIT PER COMP. UNIT	MANAGER'S TOTAL PROFIT
1	\$ 740	\$1000	\$260	\$260
2	1480	1960	240	480
3	2220	2880	220	660
4	2960	3720	190	760
5	3700	4500	160	800
6	4440	5220	130	780
7	5180	5880	100	700
8	5920	6560	80	640

The figures here used are selected more or less arbitrarily to illustrate the general truth that, as the number of the com-

posite units brought under one management is increased, the average return per composite unit, and hence the average net profit per composite unit will fall, but that for a time this fall in the net profit per composite unit is more than balanced by the increase in the number of such units, and the net profit per unit of managerial activity continues to increase until finally the point is reached where the net profit per unit of managerial activity reaches its maximum, and if the number of composite units associated with a given amount of managerial activity be increased beyond this point, the net profit per unit of the latter, and hence the total net profit which the farmer will be able to secure as a manager, will be reduced below the possible maximum. Any conditions which retard the bringing about of this adjustment not only reduce the profits of the farmer, but increase the cost of the nation's food supply.

One permanent occasion for differences in the size of farms is the differences in the amount of energy the men are willing to put into the operation of a farm.

Having decided upon the number of the composite units of the factors which should be brought under a given amount of managerial activity, that is, the intensity of the management, other things remaining the same, the size of the farm should vary directly with the amount of effort which the farmer is willing to put forth in its management. The farmer's energy is, of course, limited, and after he has performed a given amount of work per day, it requires more and more inducement to impel him to increase his activity. It may be that a few hours of work each day would be a pleasure to him and that the profits which he received from these few hours' labor would be much more than enough to induce him to perform the work of management; but when hour after hour is added to the time which he must spend in the fields, and the rapidity of his movements from place to place must be increased more and more, in order that the farm may be properly operated, each succeeding addition to the time and the speed of his work becomes more and more wearisome, while at the same time the wants which are to be satisfied by the fruits of this increased labor become less

and less important to him, until finally the point is reached where the increase in the net profit is not sufficient to induce the farmer to increase his activity.

This can be illustrated by means of a diagram. In Fig. 9 the succeeding composite units of the agents are measured

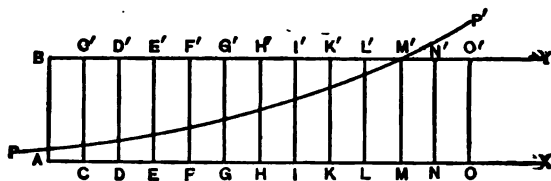


FIGURE 9

on the base line AX , and the net profit which the farmer receives for managing these units is represented by the area between this line and the line BY , so that the area $ABC'C$, for example, represents the net return from one of the composite units. If the idea of a composite unit seems too abstract to the reader, he may think of one of these units of the agents of production as being one laborer and the amount of land and equipment associated with him. That share of the net profit per unit which is represented by the area lying below the curved line PP' may be thought of as the amount which is required to yield to the manager a pleasure in consumption of goods equal to the pain of performing the work of management. Assuming that he devotes exactly the same care to each unit, as he continues to increase the number of units the perpendicular distance between lines AX and BY will remain constant; but a larger and larger proportion of the net profits of the succeeding units will be required to counterbalance the pain or disutility accompanying the added exertion required for the management of such units, hence the curve PP' will gradually rise until at some point it will cross the line BY , beyond which point the pain of exertion exceeds the net profit to be secured.

The curve PP' , representing the increase in the pain cost, may start high up the line AB and rise rapidly with a lazy man, or it may start far below A , rise slowly and not reach

line BY until some point far to the right of M' . This illustrates one of the causes of differences in the capacity of men which is a permanent cause of differences in the size of farms.

From this point of view it becomes obvious that there can be no one size of farm which will pay best for all farmers, and hence the attempt to draw conclusions from statistical studies regarding the proper size of farms sheds little or no light upon the problem of the individual farmer, however valuable these figures may be for the study of geographical and historical differences in the organization of farms.

Which is the most desirable from the social point of view, the large, the medium-sized, or the small farm? Having in mind that farmers vary greatly in their degrees of efficiency, it would seem socially desirable to have the managing done by the most efficient farmers; for in this way the labor would be under more efficient direction than where every man directs his own activities. Another advantage of large farms lies in the fact that they facilitate a more extended division of labor. There can be a shepherd who devotes all of his time to the sheep, and for this reason he can better understand his business. So it is in every line of work on the large farm. Machinery can be used to better advantage on the large farm. The efficient manager of the large farm can better determine what will pay and what will not pay, so that he is in a much better position to direct the labor power of society to the best advantage. The man who is toiling in the field as well as managing the farm is less likely to be far-sighted at a time when he is tired, and at such times he may sacrifice much of the profits for a relatively small saving of labor.

On the other hand, what improves the efficiency of the management in this way may lower the quality of the workmanship. There are some men, it is true, who seem to work better for others than for themselves, but with many others the opposite is true. There are vast numbers of small farmers who do not use good methods, who, because of their interest in that which is their own, will put forth greater effort than they would if they were working for some one else.

It has been said that certain kinds of farming lend themselves more readily than others to large-scale operations; that wheat farming, for example, is especially suited to large-scale operations, but that as this one crop system gives way to diversified farming, the advantages of smaller farms assert themselves. The owner of young stock takes more pains with them than he would if he were a hired laborer. It is certainly true as a general rule that the man who owns the lambs or pigs will lose more sleep and go to more trouble than will a hired man. "He that is an hireling, and not the shepherd, whose own the sheep are not, seeth the wolf coming, and leaveth the sheep, and fleeth: and the wolf catcheth them, and scattereth the sheep. The hireling fleeth, because he is an hireling, and careth not for the sheep."

The management of a farm is something which must be deferred through the details of the work. There is a withdrawal of the efficient manager's ability from the details and a concentration of it upon the general supervision of the farm as the size of the farm increases. As more and more of the details are delegated to hired men these details are not looked after so well as they might be if looked after directly by the master. Cato, a Roman agricultural writer, says: "Neither the assiduity and experience of the hired manager, nor the power and willingness of the master to lay out money in improvements, are so effectual as this one thing, the presence of the master; which, unless it is frequent with the operations, it will happen to him as in an army when the general is absent; all things will be at a stand." And again, Pliny says: "The ancients were in the habit of saying that it is the eye of the master that does more towards fertilizing a field than anything else."

The question of the most desirable size of farms, when viewed from the standpoint of the most economic use of the productive energies of a country, is a matter of determining the point at which the advantages of the more efficient general supervision as to crops, field-systems, intensity of culture, etc., are balanced by losses in the execution of the details of the work with less skill and personal interest.

The purely economic conclusion is, therefore, that every man who can make more by hiring to a farmer should do so, and every farmer who can increase his net profits by hiring men and increasing the size of his farm, without increasing the amount of effort which he need put forth, should do so. Each man would then get the largest net income, and the value of the farm products of the country would reach the maximum.

But the actions of men are not controlled entirely by economic motives. There is a pleasure to be derived from being one's own master, which is often prized more highly than many of the things which money can buy. As a result many men remain independent farmers when they could secure a larger income for themselves and add more to the value of the farm products of the country by being hired men under the direction of more efficient managers. And yet it may be that this economic loss is compensated for in the social gain that comes from self-directed activity.

The proper size of farms is a subject which has commanded the attention of agricultural writers since ancient times. "The ancients," says Pliny, "were of opinion, that, above all things, the extent of farms ought to be kept within proper bounds. Wherefore it was a maxim amongst them, to sow less and plow better. Such, too, I find, was the opinion entertained by Virgil, and indeed, if we must confess the truth, it is the widespread domains that have been the ruin of Italy, and soon will be that of the provinces as well. . . . With that greatness of mind which was so peculiarly his own, and of which he ought not to lose the credit, Cneius Pompeius would never purchase the lands that belonged to a neighbor."

Columella, another Roman agricultural writer, also taught moderation in the size of farms. "To the other precepts," says he, "we add this, which one of the seven wise men has pronounced as a maxim, that holds true in all ages, that there ought to be limits and measures of things; and this ought to be understood, as applied not only to those that do any other business, but also those that buy land, that they may not buy more than they are fully able for. To this is applicable the

famous sentence of our poet, *You may admire a large farm, but cultivate a small one*; which ancient precept this most learned man (Virgil), . . . expresses in verse. This, too, is agreeable to an acknowledged maxim of the Carthaginians, a very acute nation, That the land ought to be weaker than the husbandman; for, when they struggle together, should the former prevail, the master must be ruined. And, indeed, there is no doubt, that a small field well cultivated produces more than a large field ill cultivated." "Among the maxims of the ancients, recorded by Palladius," says Dickson, "there is one to the same purpose with that mentioned by Columella, 'A small farm cultivated is more fruitful than a large farm neglected.'"

CHAPTER XV

FARM LABOR AND WAGES

THE farm labor problem presents different aspects in the different parts of the United States. On the general farm in the northern part of the country the typical wage worker on the farm is a young man who is temporarily a member of the farmer's family as well as a part of the farm crew. He eats at the family table, reads the paper in the family living room after supper, puts his soiled clothes into the family washing, and in general shares the life of the farm home. If he is a good hand he will soon become interested in the work of the farm and attached to the farm by many ties other than the wages he draws. This young man is a part of the farm family, and whether he is contented with the life and interested in the work depends largely upon the success of the farmer and his wife in developing sympathetic and happy relations. There are no class distinctions. The young man expects to become an independent farmer and feels that he is gaining skill, money, and credit which will enable him to establish a home of his own in a few years. His life and his motives tend to make him a fine workman and a good citizen.

The farm with a separate boarding house for the hired men has problems of its own. Much of the personal touch is lost. The spirit of the group about the boarding table is not that of a family group. The interests of the farm are secondary in the minds of the men. The wage is the one important motive for remaining on the job. On the wheat farm, transient laborers surround this boarding house table for a short time during the harvest period and are soon gone. On the large dairy farm the table is occupied the year around, but there is a constant shifting of men. Men are going and new men are coming every few

days. The life lacks many of those finer human sentiments which make for good farm hands and for good citizenship.

Another type of wage worker on farms is the married hired man who lives in a cottage and works for the farmer by the month or by the year. He is usually furnished a cottage, a garden, and often some fuel, and a definite amount of milk per day in addition to the cash wage he receives. Another class of farm workers find places to live and work by the day or month for a farmer who pays cash wages for the work done. These outside workers become less definitely a part of the farm organization. At least two persons (the man and his wife) and often others (the children) have to be contented if the married workman is to be vitally interested in his work. Unless the family is interested in the farm, he is out of touch with the pulse beat of the farm when not at work.

While the life may be more satisfactory, the outlook of the married farm hand is not so alluring as that of the single man. A family must live from the wages. The chance of saving and becoming an independent farmer is more remote, and as a result many such families give up the hope of climbing the agricultural ladder round by round from wage earner to tenant farmer, then to mortgaged owner and finally to the free owner of a farm. Without this outlook and this goal the farm hand becomes a different type of man, less to be desired as a workman and as a citizen.

In those parts of the United States where colored and oriental laborers dominate, the conditions are very different. The colored laborer lives outside of the farmer's house in a cottage belonging to the farm, or he may live in the near-by village and go to the farm from day to day. In the North the typical farm hand is a neighbor's son, in the South he belongs to a different race. This gives ground for a difference in the status of the worker in the farmer's home, which is to be expected.

Wages. The wage of the farm hand is a complex thing not easily shown in statistical tables. The cash wage is but one of the many considerations. The young man who becomes a part of the farmer's family often makes other matters than cash

wages the deciding factor in determining whether he will take a position and whether he will hold it when once on the job. If it may be assumed that the board, the washing, and the living conditions have continued to play the same rôle in holding the farm hand in his position through the period for which wage statistics are available, it will appear that farm wages have greatly increased during the past half century.

The statistics show a rise in the average monthly cash wage rate of men hired by the year with board from \$10.09 in 1866 to \$18.05 in 1909 and a range in wages in 1909 from \$10.91 in South Carolina to \$37.50 in Nevada. When hiring by the season the average monthly rate with board ranged from \$12.69 in 1866 to \$20.80 in 1909; without board the rate ranged from \$18.08 in 1866 to \$28.22 in 1909. This rise in the average wage implies changes from year to year and differences from place to place in the supply, the demand, or the quality of the wage workers on farms.

The wage of a given man at a given time and place is the result of a bargain made by the employer and the employee. The amount the wage worker will take depends upon his desire for employment and the pay offered in the various positions open to him. The amount the employer is willing to pay depends upon the use he has for the man and the number of men offering their services. The maximum wage is determined by the productivity of labor but the actual wage is the resultant of competition among workers for positions, and among employers for men. Variations in the wages in different parts of the United States and on the same job are due to differences in the qualities of the men, in the degree of responsibility placed upon the men, the character of the work, and the conditions of life. Differences in different localities may be due to differences in the relative abundance of men. It is probable also that differences in the cost of living will have a considerable influence upon the wage rate required to draw or hold laborers in a given community. For example, wages are low in the South when compared with the North. This may be attributed to several things. The quality of the labor may be lower. The cost of

living is less, hence the supply may multiply on a lower income scale in the South. In the western states wages have been relatively high, due largely to the relative scarcity when compared with the East.

In general the price-fixing forces operate in much the same manner in determining the price paid for labor as in determining the price paid for the products of the land. One difference when compared with a staple of world commerce like wheat, arises out of the fact that the supply of laborers does not move so readily from place to place to adjust itself to the demand as the wheat supply does. Any arrangement which will provide for the easy shifting of labor will tend to bring the wages to the same level for men of the same ability in regions far from each other if the living conditions are the same.

Variations in wages are in part due to the differences in the usefulness of the employees. These differences relate to knowledge, wisdom, skill, physical strength, interest in the work, honesty, and temperament. *In general the range in wages is far less than the range in usefulness.* This is partly due to lack of a good measure of the differences, and partly because there is a variety of positions to be filled which require varying degrees of ability. Then again, some men possess one quality, some another quality, and to the extent that each person finds his proper position, he realizes on his strong points. One may have knowledge but possess poor judgment. For example, a man who knows something of the anatomy of the horse, and knows many things about giving first aid to the sick in the horse barn and in the dairy, once seriously proposed hitching to a mowing machine a 1400-pound three-year-old colt which had never had a bridle on before. Another example is that of a man who possessed heavy muscles but who used poor judgment in deciding how much muscle to use on a given occasion. As a result fork handles were continually broken, bolts were twisted off, and the cows' udders suffered from the excessive application of muscle in milking. Again a man may possess good qualities but be a grouch. He may hate nearly every one he comes in contact with and be kept on the job, at ordinary

wages, only because he does a lot of work, but being denied the high position his other qualities would have justified, because of this lack of self-control and kindly attitude toward other people. On the other hand, a young man who at first was so ignorant of farming that he walked through the hay up to a mowing machine in motion and into the cutter-bar, to his sorrow, and who was continually making mistakes which cost the farmer money, held a position, drew the going wage, and in a few years worked his way to a head position on a good farm which he filled admirably. This was made possible because of the fine spirit he always showed. He was a master at being kind, he was industrious, and he took great interest in the work of the farm. These qualities win the farmer and he will pay full wages and be patient if he likes the man and feels that he is improving in his work.

The number of wage workers on farms in the United States increased from 3,004,061 in 1890, to 4,410,877 in 1900, to 5,975,057 in 1910. The number of farms increased also but at a less rapid rate. In 1890 there were, in addition to the farmers themselves, 66 workers or farm laborers for every hundred farms. In 1900 there were 77, and in 1910 there were 94.

While this was a period of increase in the labor supply per farm, it was also a period when new types of labor-saving machinery were coming into use. The gang plow was much more widely used at the end than at the beginning of this period. The two-row corn cultivator also tended to reduce the demand for laborers, and a wider harrow was drawn by the multiple teams used on the gang plow.

Yet in spite of this increase in the supply of labor and the use of labor-saving machinery, there was apparently a relative shortage of labor as manifested by the talk about the scarcity of labor and the actual rise in wages. Either the farmers themselves worked less (which might be their desire as good prices made them prosperous) or there was more work per farm. This might arise from an increase in the size of farms or from a more intensive use of the land. The fact is, the average size of farms in the United States fell from 146.2 acres in 1900 to

138.1 in 1910. But the average improved acres increased from 72.2 to 75.2 per farm. This implies a more complete utilization of the farm. The total number of acres of land per person engaged in agriculture was about 81 in 1900 and about 70 in 1910. Thus, in spite of the fact that the investment in farm implements and machinery increased from about 90 cents per acre to \$1.44 per acre, each person engaged in agriculture operated on the average 13.5 fewer acres. This means more intensive utilization of the land or less work per man. More work may take the form of milking cows. In Wisconsin and Minnesota where dairying was on the increase, the acreage per man decreased. In Nebraska and Kansas there was an increase in the number of acres per man. In Indiana, Illinois, Michigan, and North Dakota, the ratio changed but little. In these grain states new types of machinery would tend to have this effect. That is, the more intensive farming was accomplished by means of more equipment instead of more labor.

The demand for labor is not an absolute thing. In fact it is quite flexible. The farmer can make use of more or less labor depending upon the cost of that labor. The farmer can operate his farm so as to use much or little labor. He can plow his land or graze it; he can feed his grain to cattle or he can sell it; he can keep steers and hogs or he can keep milch cows. Which he should do depends upon which pays best with a given wage scale. The higher the wage the greater the inclination to get along with less help and to choose a type of farming which makes one free from the hired man.

Many farmers who own farms and are so well-to-do as to desire to hire all the work done on their farms, avoid the whole farm labor problem by moving off the farm and putting, as share tenant on the farm, a younger man who expects to work hard and who has a family willing to help with the farm work. The farmer who stays with the farm and faces the farm labor question finds that his reward is little greater than that of his neighbor who turns over to a tenant the problem of getting the work done.

The man who faces the farm labor problem and who must solve it for his own farm finds that custom and sentiment must be used for all they will bring if he is to succeed. Custom does much to determine a wage rate which had as well be adhered to. Sentiment determines how difficult or how easy it is to secure and keep laborers at the customary wage.

One of the real problems is finding the right man for the given farm. Just as custom and sentiment have much to do in determining the wages the farmer must pay if he decides to keep help and leaves him entirely free to hire or not as he pleases, so also do these same factors tend to retard the movement of surplus labor from one place to another. But a still more important hindrance to the movement of laborers is the lack of knowledge of the opportunities available for the workers who are in the region of relative oversupply and who could do much better for themselves and serve a more important purpose in another region. Lack of knowledge of the existence of these men on the part of would-be employers, and when they are heard of, lack of knowledge of the ability and character of these employees, make the calls few for movements of labor excepting in outstanding cases like the annual movement of transients to the wheat fields in harvest time. Another retarding force is the cost of the trip, though in many instances the distance is not great if there were a means of knowing where to go.

There is real need of a network of farm labor bureaus which will provide for the information as to the character and location of positions open and the qualities and locations of men available to fill the positions. A system of this kind would go far toward stimulating better farming for the reason that many a farmer now continues to tolerate inefficiency on the part of hired men who, if they were in danger of being dropped, would do very much better work. If a bureau were at hand there would probably be more shifting of laborers for a time at least, but the result would be a better fitting of men to jobs, a greater productivity, better wages, and larger profits.

There are various methods of paying labor. The wage agreed upon may be for a year, a season, a month, a week, a

day, an hour, or by the piece. Any of these may be supplemented by bonuses, profit sharing, or by the sliding wage scale. The payment may be all in cash, but usually part in cash and part in kind.

The most common method of hiring labor in the general and dairy farming districts is to pay a definite wage per month with an agreement extending for a season or for a year. In many instances the wage rate is different for the different months of the year. For example, forty dollars per month and board for the eight months from April to November, inclusive, and twenty-five dollars per month and board for the four months from December 1 to March 31 has been noted. The fundamental character of this agreement is not very different from an agreement upon a wage by the month without any agreement as to the term of months the arrangement is to continue. In most instances the relation is brought to a close as soon as both parties are dissatisfied, even if there has been an agreement for an extended period of time.

Harvest workers and transient laborers usually work for a definite wage per day when employed and board while at work and while lying over because of weather conditions which stop the work.

In England the common method is to pay wages by the week and to settle every Saturday night. It is often the custom to supplement this regular wage by a bonus at the end of harvest if all have done well. In some instances a lump sum is paid to the crew for putting up the harvest. Under this plan each worker gets his proportion of the lump sum instead of the weekly wage. This is a higher wage and is intended to stimulate more strenuous effort in the harvest field.

Profit sharing may take the form of a percentage of the net proceeds of the year's business. This is not very satisfactory because it is very difficult to arrive at an accurate statement of the profits of a given year. Crop sharing or sharing the gross proceeds, which becomes a form of tenancy, is the most satisfactory arrangement if the profits are to be divided.

The bonus has its advantages. For example, if each work-

man in a dairy is to receive an extra wage if the bacteria count is kept below a certain number throughout the month, the bonus may prove helpful. The bonus may be used as an unpromised reward of industry and ability. When wisely administered this has a wholesome effect upon the organization.

The piece-work wage is used on the farm in getting special jobs done. Corn is often husked for so much per bushel; plowing is done by the acre; threshing is paid for by the bushel; silos are filled for so much per foot, depending on the size; ditch digging is paid for by the rod; and berries are picked by the box. Many other examples of piece work will be noted by the observing student.

Piece work is advantageous in that it stimulates strenuous activity at a time when there is an unusual amount of work to do. It results in a greater justice in the payment of wages than is secured from a standard daily wage, for each is paid according to the work he has accomplished. The rate of pay is usually much higher than the standard wage and is used in agriculture to draw an extra supply of labor for a short time as well as to speed up the work.

The main difficulty in the piece-work system arises out of the danger that the quality of the work will suffer. For example, in husking corn by the bushel there is danger that the unscrupulous workman will take the large ears and leave the smaller and less accessible ears in the field. In this way the workman may damage his employer more than the work done is worth. To be a success the work done under the piece-work wage system must be subject to inspection in order that the quality of the work may not be slighted.

The goal of the hired man is the position of an independent farmer on a farm of his own. The possibility of attaining this goal depends upon many things, all of which center about the opportunity to learn how to farm for profit and the opportunity and the inclination to save his wages. The young man who receives a moderate wage and works for a successful farmer who himself is climbing the agricultural ladder and is in the process of paying for his farm, is more likely to succeed than the young

man who receives a high wage for working on a farm owned by a wealthy man who is farming for show rather than for profit. The latter position teaches the wrong kind of farming methods and the wrong kind of spending habits for one who expects to save from his wages, become a successful farmer, and later buy a farm. The wise young man will give due consideration to the environment as well as the wage which the position offers, for wisdom, skill, good habits, and credit go farther than money in starting one on the safe road to success as a farmer.

CHAPTER XVI

FARM CREDIT AND THE RATE OF INTEREST

IN the discussion of the organization of production in the previous chapters, it has been assumed that the farmer is in a position to command the instruments of production in quantities suited to his ability and to the type of farming he is undertaking. It is a well-recognized fact that many farmers do not possess wealth enough to own the land and equipments needed.

Farm credit is essential to good agriculture. If each farmer were limited to the equipment and the land he could buy and pay for, some farmers would be wasting their energies working with too little land or inadequate equipments, while others would be trying to operate more than they could use to advantage and be "land poor." A good credit system is one which will facilitate the adjustments between those who have more than they can operate to advantage and those who can profit by operating more with a view to maximum economy. Such a credit system increases the incomes of both parties and increases the productivity of the country as a whole, hence a good farm credit system is a matter of importance to all consumers as well as to many producers of farm products.

The banks of this country are organized primarily to take care of the merchants and manufacturers. These classes of business men have a rapid turnover in their business and require large sums of money for short periods. The farmer's turnover is not so rapid. He invests in live stock, machinery, buildings, and land, all of which are essential to the success of his business, but he does not sell them in ninety days and put the proceeds back in the bank for a few days and then borrow it again for another transaction. The farmer continues to use the same land and equipments for a series of years, and if

the banker had a way of viewing this investment and testing its worth from time to time, he would be better off lending the funds to farmers on long-time loans than lending to business men on short-time loans. As it is now commonly operated, the bank is too rarely a farmers' credit institution.

With the growth of banks owned and controlled by farmers and with the work of a few prominent men in educating the bankers to the needs of the farmers, the situation is improving. It is hoped that one effect of the federal reserve system will be the possibility of more rediscounting on the part of banks instead of such frequent repayment on the part of the borrower.

The period of the loan should correspond to the farmer's turnover, or, if the property is not turned over in the regular order of affairs but held continually, then the term should be such as will enable the farmer to gradually pay the debt out of his earnings. The merchants' bank is not organized for this latter function and cannot be depended upon. Some form of land credit institution is needed for this purpose.

While the bankers of some parts of the United States are meeting the farmers' needs for short loans, there are other localities where this need is not being so well cared for. This is more particularly true of the South, where farmers quite frequently ask for advances on which to live while making a crop. It often happens that the banker is unwilling to lend directly to the farmer, but lends to the merchant, who makes advances to the farmer, often on ruinous terms. The bankers are not solely responsible for this situation, as has been proved by an experiment at Red Springs, Texas, located in a county where it was said bankers do not lend money to farmers. At Red Springs a coöperative credit association was organized in which the farmers of a neighborhood combined their resources as a basis of credit and borrowed money in \$1000 lots and lent it out among their members in smaller amounts as needed. At first the bankers wanted nothing to do with this credit association, but after a year's successful operation the banks of the county seat were ready to advance the money needed by the association. This is a commendable move on the part

of the farmers and illustrates what is often needed in order to make farmers desirable bank patrons. The group of farmers organized into an association may be looked upon as a banking auxiliary or as a farmers' borrowing organization. There is work for both the farmer and the banker in developing a better credit system.

The trust company deals in a class of long-time loans of which the farm mortgage is the typical example as far as they have to do with farming interests. Banks are much less attracted by farm mortgages. Banks and trust companies are probably of much less importance in the making of loans to farmers for the purpose of buying land than are the *well-to-do farmers and the retired farmers* of a prosperous neighborhood. These men know land values and know the borrowers both with respect to their character and their abilities as farmers. For this reason they are in a strong position to make loans with safety and at no expense for investigations, whereas the bank or trust company would find it necessary to be at considerable expense in ascertaining the merits of each particular case.

Many of these country money lenders are fine citizens and leaders for a better country life who take pleasure in seeing the young farmer climb the agricultural ladder to the position of financial independence. On the other hand, some of them are selfish, close-fisted men who enjoy making foreclosures. In general a more systematic and standardized system of money lending to farmers on mortgages is desirable.

The agents for insurance companies make great numbers of loans on farm mortgages. These agents are usually men who know the local situation thoroughly and who receive a commission from the company for placing loans. The insurance company is in no hurry for its money, hence it prefers long-time loans. Neither does it want land, hence it is not anxious to make foreclosures. On the other hand, the insurance company does not care to receive partial payments from time to time and hence the farmer may have to accumulate his savings and hold them without interest or receiving a low rate of interest while he continues to pay the higher rate for the money he has bor-

rowed. What is needed is an institution which will lend money at reasonable rates and provide for a flexible system of partial payments.

Neither the local money lender nor the agent of the insurance company provides farmers with a *means of investing their savings*. The young farmer who saves but a few hundred dollars each year cannot hope to lend this money on a mortgage, because those who wish to borrow money to invest in land generally desire a larger sum at one time. Hence the farmer finds the country bank with its low rate of interest about the only chance for investing his savings during the years he is trying to accumulate enough capital to enable him to invest in land. When the time has come for him to make an investment by paying half of the value of a piece of land from the savings of many years, he is embarrassed by the fact that while he has been able to get no more than four per cent for the use of his money, he must pay six per cent for the money which he wishes to borrow. This should certainly be enough to convince the farmer that something is wrong. The important question is, Can anything be done to remedy this condition of affairs?

Something has been done in other countries, and something is being done in this country to give the farmer a better credit system. More than a hundred years ago institutions were established in Germany for the purpose of lending money to the farmers at a low rate of interest; and the years have proved the wisdom of this course of action. The most important institutions for making loans to farmers, in Germany, are the district coöperative credit associations (*Landschaften*), which are public or semipublic institutions for the purpose of lending money on mortgages. These are organizations of landowners, who by combining their resources into an unlimited company are able to borrow money at a very low rate, — at a rate comparable to that for which the government can float its bonds. As the institution is not intended for profit, the loans are made to landowners at a rate just enough higher than that paid by the institution to cover the costs of carrying on the business. Money is lent on mortgages to the farmers and in order to

raise the money for such loans, the institution is permitted by public authority to issue mortgage bonds to the value of the mortgages it holds. As all the members of the association are jointly and severally liable to the full value of their lands, the bonds are considered excellent investments, and are floated at a low rate of interest.

When the money has been lent to a farmer by one of these institutions and a mortgage given to secure the loan, it is the regular thing to collect a small amount as a partial payment each year until the whole amount is paid. If, for example, the rate of interest charged by the institution is four per cent, five per cent will be collected each year. Four per cent is interest and the one per cent is a partial payment which accumulates with interest until at the end of a little over forty years sufficient has been paid in to cancel the debt. It is also possible for the more thrifty farmers to make other payments which shorten the period required for canceling the debt. In some cases, these additional partial payments must be paid in mortgage bonds, which can be bought at the market price.

These mortgage bonds make a safe and ready means of investing the farmers' savings. In them the farmer finds a safe investment which is as permanent as he may desire to have it, and at the same time an investment on which he can realize at any time in case he decides to invest in land. The German form of the institution may not exactly meet our needs, but it is certainly true that the principle of association is especially desirable in any system of land credit.

Not only do such institutions make it possible for the young farmers to invest their savings until they are ready to buy, and then to borrow money to finish paying for the land, but they make it more desirable for the retiring farmers to sell their land, as they can invest in bonds which are as safe as the investment in land and pay practically the same returns. Thus it is that a good credit system is the best means of keeping the tenant problem from becoming acute.

The safety of these institutions is insured by the fact that they are district associations. Each institution operates only

within a very limited and well-defined field, so that the officials are able to know the men and the land values throughout the district.

The effect of this credit system is shown by the fact that, in 1895, only 16.42 per cent of the farms in Germany were composed entirely of leased land; and only 12.38 per cent of all the land included in farms was leased land. Indeed, Germany is a nation of landowning farmers, while in France 47.2 per cent of the cultivated area is occupied by tenants, and in England the landowning farmer is the exception. Practically all the land of England is farmed by tenant farmers or hired managers.

In the last few years much has been done to bring about the establishment of a better farm credit system in the United States. This has resulted in the Federal Farm Loan Act of 1915, which provides for the establishment of Federal Land Banks which have for their purpose the lending of money to farmers at a low rate of interest on mortgage security.

The Federal Farm Loan Act provides for the division of the United States into twelve districts and the establishment of one Federal Land Bank in each district. The farmers normally come in touch with the land banks through the *National Farm Loan Association*. This association is a local institution made up of ten or more farmers of a given district who wish to borrow money on farm mortgages. Loans are limited to \$10,000 for each person. For each hundred dollars borrowed, the borrower must subscribe for one five-dollar share of stock in the association. This limits the actual amount one man can secure for farm purposes to \$9500. The amount of the loan is limited, also, to 50 per cent of the value of the land plus 20 per cent of the value of the buildings. The farm loan associations indorse the mortgages and turn them over to the Federal Land Bank of the district as security for the funds borrowed from that institution. In turn the Land Bank issues bonds which are sold to raise the money which is lent to the association and in turn lent to the farmer. It is stipulated in the law that every mortgage "shall contain an agreement providing for the payment of the

loan on an amortization plan by means of a fixed number of annual or semiannual installments sufficient to cover, first, a charge on the loan, at a rate not to exceed the interest rate in the last series of farm loan bonds issued by the land bank making the loan; second, a charge for administration and profits at a rate not exceeding one per centum per annum on the unpaid principal, said two rates combined constituting the interest rate on the mortgage; and, third, such amounts to be applied on the principal as will extinguish the debt within an agreed period, not less than five years nor more than forty years: Provided, that after five years from the date upon which a loan is made additional payments in sums of \$25 or any multiple thereof for the reduction of the principal, or the payment of the entire principal, may be made on any regular installment date under the rules and regulations of the Federal Farm Loan Board. . . . No loan on mortgage shall be made under this Act at a rate of interest exceeding six per centum per annum, exclusive of amortization payments."

The effect of a good credit system is to encourage landownership on the part of farmers. Much has been said of the inspiration which ownership of land gives to the farmer which leads to better farming and better citizenship. Much might be said of the greater joy of life on the owned farm where the home can be beautified with assurance that the worker may reap the reward of his efforts.

On the other hand, better credit usually means greater indebtedness. In a period of rising prices when the value of the farm is rising while the debt is being paid with money which is ever more easily secured, indebtedness has few horrors. But in a period of falling prices when the value of the land falls as rapidly as the debt is paid, and when the dollars are ever harder to get, the joy of ownership becomes entirely overshadowed by the fear of foreclosure. To insure that a credit system shall be a blessing it may be desirable to introduce some plan which will stabilize the purchasing power of the dollar.

Another bad effect which has been claimed against the credit system which lowers the interest rate is that it increases the

value of the land and in this way makes it necessary for the prospective buyer to pay the same amount of interest and a larger principal. The effect of better credit, in this regard, depends upon the source of the funds. If, for example, the federal farm loan bonds are sold in New York City and the money borrowed by Iowa farmers, the effect might be to force the price of land up. On the other hand, if the bonds were marketed in the same region where the money is borrowed, the effect might be very different. Many farmers in Iowa buy more land than they care to farm because they have no other safe investment available. When federal farm loan bonds can be bought at the country banks in Iowa many farmers who are now paying high prices for land just as a safe investment and many retired farmers who hesitate to sell their farms for lack of a safe investment will prefer bonds to land. The result will be that many of the strongest bidders for land will cease to buy and many holders of land will decide to sell. This will tend to increase the number of farms for sale and decrease the demand from one class of buyers at the time when an increasing number of young farmers are buying because of the better credit system. What the result of these varied forces will be is hard to predict, but where the whole system is handled in a satisfactory manner both landlord and tenant may be benefited by encouraging ownership in place of tenancy.

Interest is paid for the use of borrowed money. This money may be borrowed to invest in land or equipments, to pay labor, or to buy the necessities of life. In ancient times money was borrowed primarily to buy subsistence. At that time the charging of interest was looked upon as wrong, just as we would look upon it as wrong for a farmer to refuse to lend his ax for half a day free of charge to the son of a poor widow, in order that he may cut some stovewood for his mother. The charging of any interest was once called usury. Now only the charging of an excessive rate is called usury. This change of attitude is due to the fact that in modern life loans are usually made for productive purposes.

While interest is nominally paid for the use of money, it is

the equipments the farmer buys with the money he is really securing the use of. It is the equipment which is productive. That is, the farmer working with teams, tools, and machinery can usually produce more than working without them. Where this is true he is willing to pay for the use of these equipments. Furthermore, if he has not the means of acquiring the equipments when needed he is willing to pay a premium to have them *now* rather than wait for them until he can earn the money with which to buy them. This premium takes the form of interest paid for the use of borrowed money. How much the borrower is willing to pay for the advances of funds depends upon what he hopes to gain by their use. This varies greatly with different people and with different investments for the same people. At a given time the demand for loanable funds will depend upon the number of fine prospects for investments and upon the interest rate.

Why do the lenders of money insist on charging interest? Some of these money lenders are unable to direct productive agencies. Widows and orphans are often given as examples of this class. There are others who have more than they can manage to very great advantage and who will lend the money to some one else if the interest rate is better than the rate of return this potential lender can make on this fund when used by himself. The choice between lending and not lending is not always a *choice between two classes of investments*; it may be a *choice between saving and spending*. The higher the interest rate the borrowers are willing to pay, the more inducement there is to refrain from present consumption in order to have money to invest. Some economists attempt to measure interest in terms of the *premium which people place upon present consumption over future consumption*. Familiarity with the law of diminishing utility leads one to believe that after an individual has satisfied present wants to a certain point, future wants seem more important than the unsatisfied present wants. The degree of civilization possessed will determine where this point will be found. There are always people who will save whether or not they receive a pre-

mium in the form of interest for doing so. There are others who would not save even if the rate of interest were very high. With people as they are at a given time, the amount of saving will depend upon the extent to which the present wants seem more important than future wants and by the premium offered in the form of interest to counterbalance this greater present importance.

It has been shown why funds are useful and why they are scarce. Hence a market value is placed upon their use; this market value expressed in terms of money is the interest charge. The rate of interest at any given time is determined by the opportunities for productive enterprises and the number and energy of the men who want funds for this and other purposes, that is, the intensity of the demand for funds, the abundance of funds, and the relative importance of present and future wants in the minds of potential lenders. In other words, price-determining forces work here as elsewhere.

Why is the rate of interest different at different places at the same time, and with different people at the same time and place? That is, why is the rate of interest not uniform at all places and on all loans?

Unevenness of demand. Where there is a continuous use for funds the rate will tend to be lower than where there is a large demand for certain seasons of the year and a small demand other seasons. If funds must lie idle half of the year awaiting a seasonal demand, a high rate must be charged for the time the money is lent in order to make up a normal average rate, or else funds must be imported, at some expense, for the demand period and sent elsewhere for investment the remainder of the year.

Immobility of funds. One reason for different rates at different places is because some money lenders do not know so much about the character of the investments at a distance and prefer to have their funds close at home. Others are willing to lend money at a distance but find that it costs more to ascertain the character of the loan, hence they must have a higher rate, and, again, when the financial institutions intervene to

adjust the supply of funds this costs something which must be added to the interest rate. The interest rate tends, therefore, to be lower in a region where there is a surplus of savings than in a region where there is not enough local saving to care for the needs of investors.

Risk. The fact that some loans are safer than others is legitimate ground for differences in the interest rates. If there is any chance of losing the principal, a certain amount of insurance is added to the interest rate to compensate the money lender for taking this risk. It often happens that lack of knowledge on the part of the lender makes him assume the risk is great where it is really small. Credit associations, made up of farmers who know each other, can reduce greatly the amount of risk by eliminating the dangerous loans, and by carrying for themselves the risk which would otherwise fall upon the money lender. This is one reason the credit association can borrow at a lower rate than can the individual members of the association.

Interest and the purchase price. It frequently happens that the rate of interest upon deferred payments is fixed as a part of the bargain in the sale of a farm. For example, a retired farmer sold his farm and took a mortgage for \$12,000 at four and one-half per cent annual interest. When asked by the writer why he made the interest rate so low, the reply was, "Well, I was getting a long price for the farm." Often the buyer who may have been in the habit of paying rent, thinks especially of the amount he will have to pay in interest each year. A desire to keep this amount low may result in paying too high a price for the farm if he is favored by a low interest rate. The purchaser should keep both sale price and interest rate in mind when making the bargain. Otherwise what seems to be a low rate of interest may be a very high one.

Terms of payment. The purchaser may better afford to pay a somewhat higher rate of interest if he has the privilege of making partial payments whenever he has some money, rather than to borrow at a lower rate for a long period, say five years, with no chance to make payments until the note is due.

If one gradually saves the whole amount during the five years and deposits in a savings bank at a rate two per cent less than he is paying, the loss may be equivalent to one per cent on the face of the loan for the whole time. Where the borrower can secure a part of the funds needed at a low rate and a part at a higher rate with privilege of paying whenever he has an even hundred dollars, he will be in a position to benefit by both of these systems.

CHAPTER XVII

RENTS AND PROFITS

IN this chapter the effort will be to describe the economic forces which determine the amount paid for the annual use of land. This is important from the point of view of one making a rent contract, and it is important from the point of view of the improvement of the well-being of the succeeding generations of land workers.

The important economic questions regarding rent relate to the causes which determine the *amount* of rent paid at a given time for a given farm, the *difference in the amounts* of rent paid for different farms at the same time, and the *changes in the amounts* of rent on a given farm during a period of years. Rent is paid for only such farms as are useful and scarce. Useful farms with improvements may be scarce while raw land of the same quality is abundant, in which case a price may be paid for the improvements and not for the land. In any densely populated country, however, highly productive land is scarce and people are willing to pay for the privilege of using it.

The supply of farm land may be increased by settling unoccupied prairie regions, clearing forest lands, draining marshes, irrigating arid regions, etc., but it is generally true that the land to be secured in these ways is less inviting to the farmers in competition for the use of land, either because of the large investments required to bring the land into cultivation, which reduces greatly the return per unit of investment in the land, or because of lack of fertility or desirable location. For these reasons it has been common to think of the new increments of land supply as having a lower degree of economic productivity per unit of investment, that is, lower efficiency, than the land already in use. On this assumption Ricardo based his theory

that with the increase of population rents would tend to rise. Exceptions to this general truth arise when new and fertile regions are made easily accessible by the extension of railways, by Indian treaties, or other means of like character. When the agricultural population is increasing and the increased supply of land must be taken from the less efficient grades, the trend of rent is upwards. When new and more efficient grades of land are made available more rapidly than the population increases, the trend is downward. Thus rents may rise or fall according to the relative demand for its use. By the middle of the nineteenth century the westward movement of population in the United States had reached the prairies of the Central States, where the cost of bringing land into cultivation was at a minimum and the natural fertility of the land was at a maximum.

With the expansion of the corn area the movement was first from poor corn land to good, then from good to excellent, but with the further expansion, less and less satisfactory corn land was resorted to and it was only in this latter stage that rents began rapidly to rise. This was partially true of wheat though it is a question whether any wheat lands in the United States have ever surpassed the best wheat regions of New York and Pennsylvania. The significant fact was the great abundance of good wheat land, which resulted in the decline of wheat prices and a decline in the value of wheat lands in the older wheat regions. The westward movement brought better lands into cultivation. These better lands, for example, the black prairie of Alabama, the alluvial soils of the Mississippi, and the black prairie of Texas, were selected spots surrounded by wide areas of less useful lands which were passed by to take the better lands. The general effect was to reduce prices and rents for some time. As better and better corn, wheat, and cotton lands were taken up, price levels were on the decline, and many farmers in the older regions suffered a decrement instead of receiving the expected unearned increment in land values. But with the growth of population the increased demand for land results in keen competition for the better farms, which brings about rising rents.

The motives that underlie the actions of men when bidding for the use of land are fundamentally the same as those that operate in determining the values of other useful things. The theory of rent is therefore an attempt to indicate the way in which the theory of value works itself out when applied to the annual value of land.

While all land that is useful and scarce is valuable, all such land is not equally valuable, for the simple reason that all land is not equally useful. This variation in usefulness may be due to variations in the fertility of the land or to differences in the location of the land with respect to the market for the goods produced. Economists have usually thought of the least desirable land in use at a given time as being rent free. That is, it is assumed that the least desirable land will be in great abundance in proportion to the demand for such land, and, therefore, that no rent will be paid for its use. This "no-rent" land is then taken as the starting point for measuring the rent of the more useful grades of land. According to the *Ricardian Theory*,¹ the rent of any given grade of land is measured by the difference in the value of the produce resulting from a given outlay of labor and capital on that land, and on the no-rent land. For example, suppose a farmer can, with the same effort and expenditure, produce goods as shown in Table XI.

TABLE XI

	GROSS PRODUCT	RICARDIAN RENT
On first-grade land	\$1000	\$500
On second-grade land	900	400
On third-grade land	800	300
On fourth-grade land	700	200
On fifth-grade land	600	100
On sixth-grade or no-rent land	500	000

The assumption is that, if all these grades of land, and no more, are needed to supply the market, competition will tend to make the rent of the requisite quantity of fifth-grade land \$100, that of fourth-grade \$200, that of third-grade \$300, that

¹ David Ricardo, "Principles of Political Economy and Taxation," Chapter II.

of second-grade \$400, and that of the first grade \$500. This is said to be true because it is assumed that the farmer can as well afford to pay these sums as use the no-rent land. This theory ignores the variation in the efficiency of the factors other than land, and, while it shows the differential character of rent, which was the point Ricardo was emphasizing, it cannot be regarded as a measure of rent.

Many economists have ignored variations in the efficiency of farmers, manufacturers, and men of commerce, but others, following Walker,¹ adhere to a theory of profits analogous to the Ricardian theory of rent. They believe that all farmers are not equally efficient, and that the farmers who, because of their better judgment and greater skill, manage their farm operations better than their competitors, are able to secure larger returns from the same expenditures for labor and equipment on the same grade of land. These economists would assume the returns given for the various grades of land in the above illustrations to be the product of the least capable farmer needed to supply the demand for agricultural products, and that the farmer whose ability is superior to that of the least capable farmer will be in a position to secure a profit. The profit of a given farmer will be measured, it is said, by the difference in the value of the product that he can secure and the value of the product secured by the least capable farmer, with a given outlay on a given grade of land. For example, suppose that with a given outlay on no-rent land (that is, on the least useful land needed to supply the demand for agricultural products) the value of the product secured by the different grades of farmers is as follows :

TABLE XII

	PRODUCT	PROFIT
Farmer A	\$1000	\$500
Farmer B	900	400
Farmer C	800	300
Farmer D	700	200
Farmer E	600	100
Farmer F	500	000

¹ Francis A. Walker, "Political Economy," chapter on Profits.

The assumption is that, if the produce of all these grades of farmers, and no more, is in demand, Farmer F will just be able to pay expenses, including a living for himself and his family, but Farmer E can retain a profit of \$100, D \$200, C \$300, B \$400, and A \$500, because the more efficient farmers secure larger returns in value, as a result of the same outlay, than does the marginal farmer. This larger return may be due to the ability of a more efficient farmer to secure more produce of the same quality, or to produce a better quality of products, or at the same time to produce more and of a better quality.

The influence of variations in efficiency on rents and profits. These theories of rent and profits point in the direction of the truth but fall short of an accurate statement because they leave out of account at least three important considerations, namely, (1) the influence of variation in the efficiency of farmers on the amount of competitive rent; (2) the influence of variations in usefulness of land on the amount of profits; and (3) the influence of the variation of the usefulness of equipments and of hired laborers on rents and profits. Each of these points may, to advantage, receive our attention.

To illustrate the way these forces will tend to determine the amount of rent and profits, let the figures in the following table represent the value of the gross product that the farmers of the respective grades can produce as a result of an outlay of five hundred dollars for labor and for the use of equipments, our fixed unit of expenditure on the different grades of land. It will be assumed, in this illustration, that the more efficient farmers always invest the given outlay in the more productive forms of labor and equipments. In order to make this and the foregoing illustrations include the element of variation in intensity of culture, we have taken a fixed outlay for labor and for the use of equipments, instead of a fixed area of land. If, therefore, 100 acres be the area of sixth-grade land on which this expenditure is made, less than 100 acres of the more useful grades are likely to be cultivated with this same outlay, for it is usually true that the more useful the land, the more intensive the culture that is most profitable.

TABLE XIII

GRADES OF FARMERS	GRADES OF LAND						PROFITS
	First	Second	Third	Fourth	Fifth	Sixth	
A . . .	<u>\$2000</u>	\$1800	\$1600	\$1400	\$1200	\$1000	\$775
B . . .	1800	<u>1620</u>	1440	1260	1080	900	580
C . . .	1600	1440	<u>1280</u>	1120	960	800	405
D . . .	1400	1260	1120	<u>980</u>	840	700	250
E . . .	1200	1080	960	840	<u>720</u>	600	115
F . . .	1000	900	800	700	600	<u>500</u>	000
Rent . .	725	540	375	230	105	000	

Note that in Table XIII the figures representing the product of the F-grade farmer on the different grades of land are the same as in Table XI, where the Ricardian theory of rent was illustrated. Note also that the figures representing the product of the various grades of farmers on sixth-grade land are the same as those used in Table XII, where Walker's theory of profits is illustrated. And note further that the remainder of this table is the result of simply following out logically the assumption in the two preceding tables. That is, in this table, instead of stopping with a statement of the variations in the product of the different grades of land when farmed by the F-grade farmer, and a statement of the variation of the product of the different grades of farmers on the sixth-grade land, we here give a statement of the product which each grade of farmers produce upon each grade of land, also the rent and the profits which would be approximated, in the case of free competition among the different grades of farmers for the various grades of land.

It is here assumed that the F-grade farmer, when operating sixth-grade land and a corresponding grade of labor and equipment, will just be able to make a living without paying any rent for the use of the land. In other words, we have here a no-profit farmer operating no-rent land. On a basis of the figures in Table XIII, the F-grade farmer can afford to pay \$100 as rent for the quantity of fifth-grade land on which he would

make the same outlay as on 100 acres of sixth-grade land, for, instead of a product worth \$500, he would there be able to secure a product worth \$600. Following the same reasoning, the F-grade farmer could afford to pay \$200 for the fourth-grade land, \$300 for the third-grade land, \$400 for the second-grade land, and \$500 for the first-grade land.

When all the grades of land are viewed from the standpoint of the A-grade farmer, it becomes apparent that he can make a profit on land of any of these grades, and that he would do as well to pay a rent of \$200 for the use of the fifth-grade land, \$400 for the use of the fourth-grade land, \$600 for the third, \$800 for the second, and \$1000 for the use of the first-grade land, as to farm the sixth-grade land rent free. But is there a competitor who will make the A-grade farmer pay the price? This we must ascertain by studying the interests of the competitors.

The E-grade farmer is able to produce \$600 worth of products on the sixth-grade land, leaving him a profit of \$100. It cannot be expected that he will be willing to accept less profit from land of any other grade. He can pay \$120 as rent for the amount of fifth-grade land on which the same outlay is made as on the 100 acres of sixth-grade land, and retain the same profits, $\$720 - (\$500 + \$100) = \120 . But the F-grade farmer can bid no more than \$100 for the use of the fifth-grade land, and, so far as he is concerned, the E-grade farmer can have the fifth-grade land for anything over \$100, and can give a balance to turn the bargain. Let us, in this illustration, figure that he will pay \$105. This will leave him a profit of \$115; $\$720 - (\$500 + \$105) = \115 . In bidding for the fourth-grade land, he could not be expected to accept a smaller profit. His gross income on fourth-grade land is \$840. This, minus the \$500 outlay and the \$115 profit that he could make on fifth-grade land, leaves \$225 as the maximum rent that the E-grade farmer can bid for the fourth-grade land.

When the rent of fifth-grade land is \$105, the D-grade farmer can secure a profit of \$235 on that grade of land, $\$840 - (\$500 + \$105) = \235 . He could secure this same profit

on fourth-grade land and pay a rental of \$245 for its use, $\$980 - (\$500 + \$235) = \245 . But so far as the competition of his inferiors is concerned, any amount over \$225, let us say \$230, is all the D-grade farmer need pay for fourth-grade land. This will leave him a profit of \$250, $\$980 - (\$500 + \$230) = \250 , which is \$15 more than he could make on fifth-grade land at the rent the E-grade farmer is willing to pay. To secure the same profit on third-grade land the D-grade farmer cannot pay more than \$370 for its use, $\$1120 - (\$500 + \$250) = \370 . But the C-grade farmer, whose profits on fourth-grade land at a rental of \$230 would be \$390, $\$1120 - (\$500 + \$230) = \390 , can secure the same profit from third-grade land after paying \$390 as rent, $\$1280 - (\$500 + \$390) = \390 . It will be profitable, therefore, for C-grade farmer to outbid the D-grade farmer for the use of the third-grade land by paying \$375, for this will leave him a profit of \$405; $\$1280 - (\$500 + \$375) = \405 . To secure the same profit on second-grade land, the C-grade farmer can bid no more than \$535 for its use, $\$1440 - (\$500 + \$405) = \535 . But the B-grade farmer whose profit on third-grade land at a rental of \$375 would be \$565, $\$1440 - (\$500 + \$375) = \565 , can secure the same profit from second-grade land after paying a rental of \$565 as rent, $\$1620 - (\$500 + \$565) = \555 . It will be profitable for him, therefore, to outbid the C-grade farmer for second-grade land by paying \$540. This will leave him a profit of \$580; $\$1620 - (\$500 + \$540) = \580 . The B-grade farmer could pay no more than \$720 for the use of the first-grade land and retain this same net profit, $\$1800 - (\$500 + \$580) = \720 ; but the A-grade farmer can pay any amount up to \$740 for first-grade land rather than take second-grade land at \$540; for his profit on second-grade land would be \$760; $\$1800 - (\$500 + \$540) = \760 , and $\$2000 - (\$500 + \$760) = \740 . As \$720 is the most any other competitor can pay for the use of first-grade land, the A-grade farmer can secure this grade of land for a fraction over that amount, let us say, \$725, and retain a profit of \$775.

It is a matter of common observation that competition tends to distribute the farmers on the different grades of land in ac-

cordance with their efficiency, the A-grade farmer on the first-grade land, the B-grade farmer on the second-grade land, and so on. The fact that each grade of farmers can win a larger profit on the grade of land that corresponds to his degree of efficiency is the force that tends to bring about this condition of affairs. But it is not the individual farmers alone who are benefited as the result of the working out of this tendency. The combination of the productive forces that puts the most useful agents of production into the hands of the most efficient farmers results in the largest total production of economic goods for the country as a whole.

These points may be illustrated by use of Table XIII. Let the student calculate the profits that each farmer could make on the various grades of land and it will become more clear that competition makes the rents of the various grades of land such that the farmer's profit is the greatest on the land to which his grade of efficiency adapts him. Again, let the student calculate the total value of the product of all grades of land when the A-grade farmer is on the first-grade land, the B-grade farmer on the second-grade land, and on down the list. ($\$2000 + \$1620 + \$1280 + \$980 + \$720 + \$500 = \$7100$); then let him try any other combination, and it will be found that no other combination of the grades of farmers and land will result in so large a total product.

In actual practice it is evident that custom, sentiment, and lack of knowledge retard the operations of the economic forces to the detriment of individual and national well-being. Yet the fact has long been recognized that the farmers who are the most efficient do actually tend to get the best grades of land and equipment.

This analysis of the forces of distribution forms the basis for drawing some significant conclusions. First: *It makes a difference which grade of land the farmer chooses. The farmer who is the most efficient can secure the highest profits from the land that is most useful for his lines of production. This is likewise true of the labor and equipment employed by him.* Second: *All farmers of superior ability may save from their profits and*

thus get ahead in the world, i.e. "the iron law of wages" operates only for the marginal farmer. Third: the farmer can make use of the highest degree of skill and knowledge without fear that the landlord will be able to take, in the form of a higher rent, all of the extra product due to more efficient management.

Thus far rent and profits have been considered at a given time with a given supply of land, equipments, laborers, and farmers, and a given market condition. It is well recognized that with the passing of time, the relative abundance of the factors of production changes, market conditions change, and the degree of skill and knowledge changes, resulting in changes in the amount of rent paid for a given piece of land.

With the growth of population a double effect on rent tends to follow: First, increased demands for produce increase the price of the products so that the rent measured in terms of money will rise even though the share of the product going to land remains the same. Then again the growth of population and the resulting increase in competition for the use of the land tends to make people willing to take up land formerly considered too poor to make it worth while to cultivate it, but before taking this inferior land they will bid higher for the land already in cultivation and this will result in an increase in the proportion of the product paid for the use of land. On the other hand, improvements in the means of transportation which will result in an increase in the supply of good farm land more rapidly than the farm workers increase will tend to reduce the share of the product paid for the use of the land. This was true during the period following the extension of railways into the prairies of the North Central States. *The general principle is that with changes in the relative abundance of land, labor, and capital, the most slowly increasing factor is in a position under conditions of free competition to command an increasing proportion of the product.*

The withdrawal of large numbers of farm workers from agriculture in case of great national emergencies like the world war will tend to increase the proportion going to the human factor and reduce the proportion if not the amount of rent.

On the other hand, the call of patriotism and high prices may stimulate men to utilize more completely their maximum potential capacity for farm work. This will tend to overcome the tendency for rents to fall, for increasing the capacity of men means that each man will demand more land, which will in turn tend to increase rent or at least retard its fall.

The increase in the efficiency of men, which results in more produce from the same amount of land and labor, will, other things being the same, tend to reduce rents for, with the demand for produce remaining the same, increased supply will tend to lower the prices of produce. While this would be the first effect, lower prices would tend to stimulate population and in the long run increased efficiency will enable a growing population to encroach farther and farther down the scale to less and less productive land and bid higher and higher for the good land, driving rents higher than they could have been without the increased human efficiency.

The accumulation of capital may result in the increase of rents, and the reduction in the supply of capital available for agriculture may reduce rents. The growth of the capital supply normally tends to reduce the rate of interest, and the price of equipments, and for these two reasons stimulate the buying of farm equipments, which not only tends to increase the total product of the land but to give a larger proportion of the produce to the owner.

Any improvement in the type of farming in a given locality which will give more nearly continuous profitable employment throughout the year, either by using more land or by providing more profitable labor on a given piece of land, will tend to give an increased proportion of the produce to the owner of the land.

Thus while it is true that differences exist among men as well as among the different grades of land, which give basis for a special differential return in the form of profits to men, it is true also that competition may result in the decrease of one of these surpluses to the advantage of the other. If farmers and workmen and equipments increase more rapidly than land

of the quality in use, competitive forces tend to increase rent at the expense of the return to the other factors.

Figure 10 is intended to illustrate the distribution of the gross returns of the agricultural industry, among the factors of production. This illustration is based upon Table XIII and it is assumed that the factors will be brought together in the most productive manner, that is, with the most efficient farmers operating the most efficient forms of equipments upon the most efficient land, and that these factors are associated in the proper

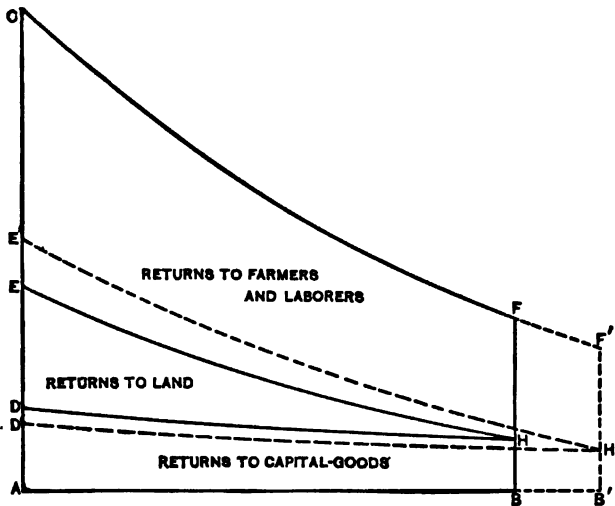


FIGURE 10

proportion. Under these conditions the composite units which are made up of the most productive grades of the factors will yield a relatively larger product, in proportion to their productivity, even, than the units made up of the less productive grades of the factors, and hence, in the higher grades each factor will receive the necessary minimum and a further differential due to superior efficiency and to the coöperation of the more productive grades of the factors.

When the subject of distribution is viewed from the standpoint of industrial progress, through a long period of years,

the most important fact to be considered is that the other factors usually increase more rapidly than does land. As the farmers and the equipments continue to increase more rapidly than the land, some of the better grades of these more rapidly increasing factors are crowded down farther and farther upon the less and less productive land. This necessarily results in the driving out of business of some of the lower grades of farmers and equipments, leaving upon the margin higher grades of these factors, which will be able to earn their necessary minimum upon lower grades of land, and hence the margin of cultivation may be driven down to less productive land by the competition of the increasing numbers of farmers and the increasing supplies of equipments. The resulting change in the distribution of the gross product among the factors is illustrated by the dotted lines in Fig. 10, where it will be noted that the rent rises as a result of a fall in the returns to the other factors of production.

It is possible for the rent to rise, however, without any absolute decline in the returns to the other factors. Changes in the prices of agricultural products will greatly influence the share which will be accounted to land. When, as a result of increased demand for food and clothing, the prices of agricultural products rise, the share of the returns of a given farm which may be credited to land increases. When, for any reason, such as the opening of vast areas of very productive land, the prices of agricultural products fall, the share of the gross returns which can be paid for the use of land will, other things remaining the same, necessarily fall, and the movement will tend to be the reverse of that shown in Fig. 10.

The laws of value and price hold true with respect to the price which is paid for the use of land and equipments; but as we have seen, the conditions of supply and demand are very complex, and the difficult problems in distribution arise out of the fact that costs and prices do not correspond except on the margin where the least productive of all of the factors are brought together, and that there are large surpluses over costs, to be divided. It was one time thought that all of this

surplus should be attributed to land ; but in recent years economists have come to see that each of the factors is in a position to command a share of the surplus, that the share secured by each is worked out through supply and demand, and that the most slowly increasing factor tends to receive a larger and larger proportion of the surplus.

CHAPTER XVIII

THE VALUE OF FARM LAND AND EQUIPMENTS

It is easy to say that the price of land, like the price of any other economic good, is determined by the forces and conditions which regulate the demand and the supply; but this is too general to be of any help to the farmer who is trying to estimate the value of a particular piece of land.

The net rent, or the share of the gross returns which, under conditions of free competition, is credited to land, above what is necessary to keep the land intact, is the starting point for figuring the value of a piece of land. When a man invests in land, the thing for which he really pays is the perpetual right to use the land and to be free from the payment of rent, or to receive the income which the land will yield if leased to some one else.

The essential difference between the buying of a piece of land and the buying of a perpetual annuity bond lies in the fact that while the income from the latter is fixed in terms of a money income, the former may rise or fall as a result of changes in the conditions of competition for the use of land, or from changes in the value of the unit of the standard of value.

Let it be assumed that the net rent of a given acre of land is six dollars. On the further assumption that this amount will not change, we may think of this acre of land as a perpetual bearer of an annual income of six dollars. Six dollars this year, six dollars next year, and the next, and so on so long as time shall last. The total amount of rent which may be received from this land is incalculable. If there is no limit to the number of years during which rent may be received for the use of this land, then the amount of rent to be received may become infinitely great, and if one were required to pay down the full

amount of all these possible rents, which the future years may possibly yield, the price of land would be such that no man could purchase it.

As a matter of fact, however, the present market value of the perpetual rent bearer is often not more than twenty times the net rent, and it is seldom more than thirty times the rent. This is explained by the fact that present wants are estimated more highly than future wants, which leads to the discounting of future incomes¹ "at a rate that reflects the prevailing premium on the present." The rent which will be due one year from date is discounted at this prevailing rate, and so it is for all the succeeding rents. The present values of the succeeding future rents grow smaller and smaller as the time one must wait for them becomes greater and greater, until finally the rent which is due at the end of an infinite period of time would be infinitesimal.

When the rate of discount is five per cent, for example, the present valuation of a six-dollar rent which will be due in ten years is approximately three dollars and sixty-eight cents; the six-dollar rent which is due after twenty years has a present valuation of about two dollars and twenty-four cents; and the six-dollar rent which is due in forty years has a present value of about eighty-four cents. If this process of discounting future rents be carried far enough, the point would finally be reached where the present value of the future rent is too small to be taken into account. The present value of the rent which is due after an infinite number of years is infinitesimal. If the present values of all these future rents be added together, the sum would be the present capital value of the land, or the amount of capital which, if lent at a rate of five per cent per annum, would yield the same income as the land is yielding at the present time.

The simple mathematical method of finding this "sum" is to divide the annual value, that is, the net rent, by the rate which "reflects the prevailing premium on the present." If

¹ Frank A. Fetter, *Publications of the Am. Econ. Assn.*, Papers and Proceedings of the Sixteenth Annual Meeting, Part I, p. 196.

the net annual income derived from a piece of land is six dollars per acre, and the rate of discount is five per cent, the present capital value of the land would be one hundred and twenty dollars per acre. One hundred and twenty dollars is, then, the amount of money which, if lent at five per cent, would yield an annual net income of six dollars. This is usually spoken of as the *capital value* of the land.

That this simple method of dividing the six-dollar net rent by the prevailing rate of discount to find the capital value of a piece of land is equivalent to finding the sum of an infinite series of prospective net annual three-dollar rents discounted at the same rate may be demonstrated as follows:

The present value of a dollars due in t years if the interest be compounded annually at the rate of r would be $\frac{a}{(1+r)^t}$ since

X dollars compounded at rate r would give $X(1+r)^t$, and if $X(1+r)^t = a$ then $X = \frac{a}{(1+r)^t}$. If then the net income of a

farm be a dollars a year its value would be expressed by the equation: $V = \frac{a}{1+r} + \frac{a}{(1+r)^2} + \frac{a}{(1+r)^3} + \frac{a}{(1+r)^4} + ad \text{ inf.}$

This is an infinite "geometrical" progression with first term $\frac{a}{1+r}$ and ratio $\frac{1}{1+r}$. The limit of the sum of such a series is

$\frac{\frac{a}{1+r}}{1 - \frac{1}{1+r}}$ which reduces to $\frac{a}{r}$. We have then the formula for

the value: $V = \frac{a}{r}$ which is the ordinary method of capitalizing rent.

As a matter of fact, however, the present capital value of the land as determined in this way does not often correspond with the price which is paid for land. There are several important reasons for this difference. First it is not certain that the annual income that can be drawn from one hundred and twenty dollars will always be six dollars. The rate of interest may fall to four

per cent, which would reduce the income to be derived from that amount of money to four dollars and eighty cents, while the annual income from the land would not be reduced by a lowering of the current rate of interest. The belief that there is a greater probability of a decline in the income to be derived from the money than from the land, often makes men willing to pay more for land than the amount of capital which will now yield the same income.

Another reason which leads men to pay more for land than a money loan which will, at the present time, yield the same income, is the belief that with the progress of society the competition for the use of land will result in a rise in rents, that, while there is a tendency for the annual income which can be derived by lending a given amount of money to decline, there is at the same time and under like conditions a tendency for the income of a given amount of land to increase.

The available land supply of a country usually increases less rapidly than the population, so that it becomes necessary to resort to land which is either less fertile, less favorably situated, or more difficult to bring under cultivation; and as a result of keener competition for the better grades of land the amount which will be offered for the use of such land will rise. While this is what usually happens in the long run, it sometimes happens that the discovery of great quantities of very fertile land, and the invention of better means of transportation making this new land more accessible, will for a time reduce the competition for the land which was already under cultivation, and the rent of such land may, for a time, be reduced; but it is believed that the occasional reactions of this kind cannot permanently counteract the tendency for the price of land to rise.

The land which yields the highest rent at one time may be surpassed in the amount of rent which it will yield at another time, by land which was formerly let for a smaller rent. This may be the result (1) of the introduction of a new crop which thrives best on the land which for other purposes was counted inferior; (2) it may be the result of a dense population in a region which had formerly been sparsely populated, in other

words, the development of a better home market; (3) it may be the result of an improvement in the means of communication which makes the land which was formerly more fertile but less accessible, equally accessible, and hence, more valuable; or (4) it may be the result of a rise in the prices of agricultural produce, or a fall in the current rate of interest, either of which would result in a more rapid increase in the value of land which is more fertile and accessible, but which requires relatively larger expenditures to bring it into cultivation, than in the value of land which is less fertile or accessible but much more easily brought into cultivation. All of these possible variations in the annual value of land must be properly anticipated and included in the list of future incomes which are discounted to find their present values.

Perhaps enough has been said to impress the thoughtful reader with the fact that to determine the value of a piece of land is by no means a simple matter. When a man sells a piece of land he transfers his right to a series of annual incomes which may be greater or less as time passes by, but which will probably increase as the years go by. In payment for this land he is to accept another income-bearer which may yield a larger or smaller annual income as the years go by, but which will probably yield a smaller income in the future than at present. This circumstance makes it impossible to do more than approximate the actual present value of a piece of land.

The presence of so many uncertainties makes the buying of land partake more or less of the character of speculation, and during times of prosperity the tendency is for men to be optimistic and overestimate the probabilities of a rise in rents or a fall in the rate of interest. On the other hand, when periods of depression come, the tendency is for men to underestimate the future possibilities. As a result of this psychological element, the tendency is for the price of land to rise too high during periods of prosperity and to sink too low during periods of depression. As many years are usually required for one of these changes from undervaluation to overvaluation to take place, land does not lend itself so readily to speculation as does

wheat, for example; and yet the man with plenty of funds which are available at the right time may win large profits from speculations in land. Speculation if indulged in at the proper time may keep the price of land from falling so low as it might otherwise do in times of depression, and also from rising so high as it otherwise might during times of inflated values. This is true only where the speculator is wise enough to buy when prices are too low and to sell when the values rise too high. Unwise speculation in land may have the very opposite result.

The study of the rise and fall of the price of land in the United States seems to show that there are times when the price rises rapidly for a few years and then remains stationary for several years. This latter period is usually characterized by the fact that sales of land are relatively few. Land is generally held at the prices which were reached during the period of rapid sales, when optimistic views of the future forced the price considerably beyond the present capital value. If sales are made during this dull period they are likely to be at a price appreciably lower than that at which land is usually held, and likely to be a forced sale. The price of land, then, may be illustrated by a curve which rises during one period, remains on the same level or falls during a succeeding period, and then rises again. When viewed for a long period of time, the general rise in land values is evident, but the temporary fluctuations are very important to any one interested in buying land.

The price of land in any given district is influenced by the number and character of the men who desire to be farmers in that district. It often happens that competition for the use of land is keener in some regions than in others, even though the land be as fertile, and the prices of agricultural products as high, in the one place as in the other. Some districts produce more high-grade farmers each generation than do other districts, and as a strong motive is required to impel the surplus of farmers to remove to another district, competition in the overpopulated district forces the rents and the prices which are paid for land higher and higher until they are appreciably above the level of those which are paid for land in other districts which

are capable of producing crops which are just as valuable in terms of money.

Again, it sometimes happens that land is valued for the social standing which accompanies its ownership, as well as for the income in money which it yields. In a country where this is true, and where, at the same time, there are large numbers of persons who have great fortunes and who are very desirous of attaining to a high social position, the prices which may be paid for land often rise far beyond what could be paid if the series of annual incomes in cash were the only factor to be taken into account.

Of two pieces of land which will rent for the same amount, that in one district may sell for a higher price than that in another because there is more money seeking investment in the one place than in the other. A man of wealth will usually rather have his capital invested in land near where he lives than at a great distance where he cannot so readily look after his property, or if he invests in land at a greater distance he will usually expect a higher rate of return to counteract the disadvantages arising from the distance.

This same principle of capitalization may be applied to other forms of income bearers as well as to land. In estimating the value of a given machine, the farmer may think of the amount of service he is to get out of the machine during the next ten years, let us say, on the assumption that the machine will be worn out in that time. This is a rather difficult process because the deterioration of the machine and perhaps, also, the invention of a better machine to do the same work will result in a gradual reduction in the usefulness of the machines; and yet, if he is to invest wisely in the various forms of equipment, the farmer should attempt to estimate the value of the series of uses which may reasonably be expected to be gotten from the particular instrument of production during the time which it shall be at all serviceable, and then find the present value of these future uses by discounting them "at a rate that reflects the prevailing premium on the present."

This *capital value* of the instrument represents the maximum

price which the farmer can afford to pay, but does not, of course, necessarily represent the market price of the instrument of production. The market price may be greater or less than the capital value obtained in this way, for the instrument of production may have as many valuations as there are different grades of farmers to use it and different grades of uses to which it may be put by a given farmer. In order to get a capital value that will correspond more or less closely to the market value of the various forms of capital-goods it will be necessary, therefore, to arrive at the competitive price which will be paid for the use of a given equipment during the series of years of its usefulness, and then find the present value of the series of incomes, in the same way as has been done in the case of land. But since it is not common in this country to let horses, tools, and machinery to farmers for a hire, this method of capitalization is less practical to the farmer when applied to equipments than when applied to land.

The cost of producing the machine or the horse is an important element in determining the price which must be paid for it in order that it may be produced. On the other hand, the usefulness of the machine or the horse to the farmer forms the basis for his estimating whether or not he can better afford to pay the market price or do without them. It may be true even that the capital value of the instrument, when calculated on the basis of its usefulness to a given farmer, may be greater than its market value and yet it might be unprofitable for the farmer to buy the particular horse or machine, because other means of securing the same end might prove more profitable.

The theory of capitalization is especially useful in the consideration of the value of farm land because the value of a given piece of land has no particular relation to the cost of bringing such land under cultivation. The income received by the landlord is largely a surplus which is credited to land because it is scarce, rather than because it costs any definite amount to improve the land. Land is also much more permanent in character than is equipment, and for this reason, also, it lends itself with more facility to the above method of capitalization.

The fear that the price of land has been rising too rapidly and that present prices are highly speculative is rapidly gaining in its hold upon the minds of farmers. It can be shown that a rise in the price of land has been warranted, but the present situation deserves careful consideration and conservative action. The young farmer had better continue as a tenant a while longer unless he has at least half the purchase price in addition to funds enough to equip and operate the farm.

The price per acre of farm land in the United States doubled during the decade from 1900 to 1910. There is no record of an equally great rise in the price of farm land in any other period in the history of our country. From 1850 to 1860, after the mid-century gold discoveries, the price per acre of all farms increased 46.5 per cent; from 1860 to 1870, 11.8 per cent; 1870 to 1880, 4.2 per cent; 1880 to 1890, 12 per cent; whereas the average price of farm¹ land in the United States *fell* 7.1 per cent during the decade from 1890 to 1900, owing largely to the depression in the West. The unparalleled rise in the prices of farm lands in recent years calls for some explanation. Where the increase in the price of land is due to a rise in the returns from investments in land, this increase is normal and to be expected. On the other hand, to the extent that the price of land rises without a corresponding rise in the income from land or a general fall in interest rates, the farmer and the nation have something to fear.

As farm land values should depend upon rents, so farm rents are dependent upon the prices of farm products. The value per acre of farm products increased 66.8 per cent during the same period that the price of land doubled. If rents increased in proportion to the prices of products, this would yet leave a third of the increase in the price to be explained in terms of other forces.

An increase in the share of the proceeds of the farm secured by the landlord would normally result in a more rapid rise in the price of land than in the price of crops. There has been a rise in share rents in parts of the north central states. Some land which rented for a third came to rent for two-fifths. Some land

which rented for two-fifths is rented for one-half. Unfortunately, the census gives no measure of the increase in rents.

The cash income from land may remain the same and a legitimate rise in the price of land result from a fall in the interest rate on safe loans. It is doubtful if this has been an important influence in the recent rising prices of land.

Belief in future increase in the returns from land may be the occasion of a rise in prices beyond the amount on which the rent will at present pay interest. This is the speculative factor in the present price of land. Just what share of present prices are speculative no one can tell. Much which was speculative investment prior to war prices appears no longer to be speculative, because the return which goes to land as share rent pays a satisfactory rate of interest on the present price of the land. The danger is that the prices of products will fall and leave the land values on a speculative level again.

The paying of a price for farm land beyond its worth as a basis of farming operations is not so serious a matter for the purchaser who is able to pay cash for the land. If he has paid too much and the price does not rise, or having risen falls again, he is poorer but not broken. With the man who buys on a land contract with only 20 per cent of the purchase money paid down, the case is different. In recent years many farms have been purchased at a high price and with only a small proportion of the purchase money paid down. The outcome has usually been good because of the ability of the purchasers and the trend of prices. If debt paying is favored by rising prices of farm products, most farmers will pull through safely, even when land prices are above the productive value of the land. In case of stationary prices, all have a hard time, but the more able will succeed in spite of the burden of excessive principal and interest. If an era of falling prices should follow, hope would soon be crushed and the failure of all but the very ablest would be all but certain. It is unwise for a farmer to invest a large share of his savings in a *non-interest bearing speculative margin* in the price of land.

There are many explanations of the extraordinary rise in

prices in the first decade of the twentieth century. It followed a period of depression. It was the period when people became conscious that the land supply is limited, and that the good, free land has been taken up. It was a period of great increase in the supply of gold and also a period of great increase in the use of bank checks in the place of gold certificates, — this is thought to be sufficient to account for half the rise in the prices of farm products. The ease with which old debts were paid with cheaper money has made people hopeful in obligating themselves for the payment of larger debts.

These are some of the most important principles and conditions which should be kept in mind in the consideration of the values of farm land, and of farm live stock and equipment. The prospective buyer of land will do well to bear in mind the advice of Cato, a Roman agricultural writer, who is quoted by Pliny¹ as saying: "Do not be too eager in buying a farm. In rural operations never be sparing of your trouble, and, above all, when you are purchasing land. A bad bargain is always a ground for repentance."

¹ Pliny's "Natural History," Book XVIII, Chapter VI; "Bohn's Library" edition, Vol. IV, p. 11.

CHAPTER XIX

THE FARMER'S MEANS OF ACQUIRING LAND

Free land. Hitherto the progress of American agriculture has been powerfully influenced by the presence of vast areas of government lands which were easily secured, easily brought into cultivation, and which gave large returns upon investments. The presence of these vast areas of cheap land of great fertility in a country where labor was scarce led to the invention of many labor-saving devices until America became noted the world over for her agricultural machinery; but, above all, the presence of free land has made oppressions by landlords impossible. The farmers have been able to take up valuable government lands. This means of acquiring land ownership has been very important from the time the first settlers landed in the New World until the present time. When, in the earlier days, land became scarce in Massachusetts, emigration to Connecticut set in, and when the best lands in both of these colonies were occupied, there still remained unoccupied good land in New York. When the small farmers of Virginia were crowded out by the great planters, they found unoccupied lands in North Carolina, and later they followed Boone into the wilderness of Kentucky. In time the occupation of the Mississippi valley was completed, and in more recent years, since the great plains have been made easily accessible by railways, the settlement of new land has gone on at an exceedingly rapid rate.

That the acquisition of landownership was an easy task for the American farmer of the earlier days is indicated by the following quotation taken from a description of the settlements along the Monongahela in 1772 and 1773: "Land was the object which invited the greater number of these people to cross the mountains, for as the saying then was, 'It was to be

had here for taking up ' ; that is, building a cabin and raising a crop of grain, however small, of any kind, entitled the occupant to four hundred acres of land, and a preëmption right to one thousand acres more adjoining, to be secured by a land office warrant." ¹

In 1790 Alexander Hamilton proposed a plan for the disposition of the public lands which reads as follows: "In the formation of a plan for the disposition of the vacant lands of the United States there appear to be two leading objects of consideration: one, the facility of advantageous sales, according to the probable course of purchases; the other the accommodation of individuals now inhabiting the western country, or who may hereafter emigrate thither. The former, as an operation of finance, claims primary attention; the latter is important, as it relates to the satisfaction of the inhabitants of the western country. It is desirable, and does not appear impracticable, to conciliate both. Purchasers may be contemplated in three classes: moneyed individuals and companies who will buy to sell again; associations of persons who intend to make settlements themselves; single persons or families, now resident in the western country or who may emigrate thither hereafter. The two first will be frequently blended, and will always want considerable tracts. The last will generally purchase small quantities. Hence a plan for the sale of the western lands, while it may have due regard for the last, should be calculated to obtain all the advantages which may be derived from the two first classes." ²

The government was slow in formulating the plan which finally became most significant in the conversion of the public domain into a nation of farms. The American statesmen of the eighteenth century looked upon the western lands "as an asset to be cashed at once for payment of current expenses of government and extinguishment of the national debt." ³ This desire to convert the public domain into cash led to the

¹ The Settlement of the Western Country, by Reverend Joseph Doddridge, in Hart's "American History Told by Contemporaries," Vol. II, p. 387.

² See "The Public Domain," by Donaldson, p. 198.

³ *Ibid.*, p. 196.

sale of land in large tracts. Under the ordinance of May 20, 1785, surveyed lands were offered in lots as large as a whole township of 36 sections of 640 acres each, for not less than \$1 per acre.¹ Under an Act passed May 18, 1796, which provided for the survey of certain lands in the present state of Ohio, surveyed lands were to be offered at public sale in sections of 640 acres, and in lots of eight such sections each. The minimum price was then fixed at \$2 per acre.² Prior to May 10, 1800, 1,484,047 acres of land had been sold from the public domain for the benefit of the United States. From these sales was realized \$1,201,725.68.³

Under an Act of May 10, 1800, land offices were opened in the Northwest Territory. The minimum price was kept at \$2 per acre. Lands were offered for three weeks at public sale in sections and half sections, and what remained at the end of this period was to be sold privately, as wanted, at the minimum price. During the next twenty years the net sales of government lands were 13,642,536 acres, from which the sum of \$27,900,379.29 was realized.⁴ In 1820 the minimum price of land was reduced to \$1.25 per acre. The revenue idea was gradually abandoned and the settlement of the western country came to be looked upon as the principal end in view in the disposition of the public domain.

The preëmption system, which gave the preference to actual settlers in the sales of land at the minimum price, was embodied in sixteen special Acts between 1801 and 1841. At the latter date a general Act was passed which, with minor changes, remained in force until 1891. The actual settlers were permitted to enter upon tracts of land not larger than 160 acres nor less than 40 acres before such lands had been offered at public sale. The requirements were that the person should reside in a dwelling upon the tract, improve and cultivate a part of the land, and after a limited period pay \$1.25 per acre.

"The preëmption system," says Donaldson,⁵ "arose from the necessities of settlers, and through a series of more than 57

¹ See "The Public Domain," by Donaldson, p. 197.

² *Ibid.*, p. 202.

³ *Ibid.*, p. 200.

⁴ *Ibid.*, p. 203.

⁵ *Ibid.*, p. 215.

years of experience in attempts to sell or otherwise dispose of the public lands. The early idea of sales for revenue was abandoned and a plan of disposition for homes was substituted. The preëemption system was the result of law, experience, executive orders, departmental rulings, and judicial construction. It has been many-phased, and was applied by special acts to special localities, with peculiar or additional features, but it has always and to this day [1880] contains the germ of actual settlement, under which thousands of homes have been made and lands made productive, yielding a profit in crops to the farmer and increasing the resources of the nation."

The Homestead Act of 1862 was the final step in the direction of free land for actual settlers. This law was the result, in part at least, of the agitations of the Free Soil Democrats. They claimed "that the public lands of the United States belong to the people, and should not be sold to individuals, nor granted to corporations, but should be held as a sacred trust for the benefit of the people, and should be granted in limited quantities, free of cost, to landless settlers."¹

The homestead law enables the landless farmer to secure a quarter section, 160 acres, of land and acquire a title to the same by maintaining residence thereupon and improving and cultivating the land for the continuous period of five years.²

"The homestead act," says Donaldson,³ writing in 1880, "is now the approved and preferred method of acquiring title to the public lands. It has stood the test of eighteen years, and was the outgrowth of a system extending through nearly eighty years, and now, within the circle of a hundred years since the United States acquired the first of her public lands, the homestead act stands as the concentrated wisdom of legislation for settlement of the public lands. It protects the government, it fills the states with homes, it builds up communities, and lessens the chances of social and civil disorder by giving

¹ See "The Public Domain," by Donaldson, p. 332.

² Circular from the General Land Office showing the manner of proceeding to obtain title to public lands, 1904, p. 11.

³ See "The Public Domain," by Donaldson, p. 350.

ownership of the soil, in small tracts, to the occupants thereof. It was copied from no other nation's system. It was originally American, and remains a monument to its originators."

From 1873 to 1891 a Timber Culture Act was in force. This act, as first passed, enabled "any person" to obtain not more than 160 acres of land by planting 40 acres of timber and properly caring for the same for ten years. The number of acres of timber required was finally reduced to 10, and the period of cultivation to eight years. The privilege came to be restricted, however, to persons twenty-one years of age, heads of families, citizens of the United States, or one who has filed his declaration of intention to become such. The law was a failure from the standpoint of timber culture, but in all 44,229,950 acres of land were entered by this method.

The total area included in farms was more than doubled between 1860 and 1900. The acreage in farms was 407,212,538 in 1860, and in 1900 it was 838,591,774. The importance of free land in this increase in the total area of land in farms is shown by the fact that between January 1, 1863, and June 30, 1900, 188,149,032 acres of land were entered under the homestead laws. It is estimated that public lands had been disposed of by the government prior to June 30, 1860, to the extent of 417,587,322 acres.¹

The free distribution of farms by the Government practically no longer exists. Although over one-tenth of the total land area of the United States, exclusive of Alaska and the insular possessions, remains unappropriated and unreserved (222,448,225 acres in 1918 out of the total area of 1,900,947,200 acres), this land is nearly all desert or semi-desert and unsuitable for the production of crops. It is located principally in Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Wyoming, and most of it is used for grazing sheep and cattle particularly, during the winter and spring

¹ Donaldson ("Public Domain," p. 519) says: "The disposition of the public domain from its origin to June 30, 1883, is estimated at about 620,000,000 acres." From this number has been subtracted the sum of the amounts annually disposed of each year from June 30, 1860, to June 30, 1883, or 202,412,322 acres.

months when the vegetation is more abundant. A large acreage is required to support a family even in a modest pioneer manner, as is indicated by the fact that under the Grazing Homestead Act, which allows only 640 acres to an applicant, but 20,000,000 acres had been designated by June 30, 1919, divided between nearly 33,000 applicants. Practically all these grazing homesteads which offer the slightest possibility of success have been applied for. When an Indian reservation is now thrown open to settlers there are many applicants for every desirable piece of land. In the summer of 1904 there were in one case 106,308 persons registered with the hope of drawing farms where there were but 2412 pieces of land of 160 acres each for distribution.

Land settlement. While free land, useful for agricultural purposes, is scarce and no longer plays an important part in the maintenance of landownership on the part of farmers in the United States, there is much unoccupied land in the old forest regions which is now on the market at a low price. Whether the price is relatively low when compared with the old prairie farms may be doubtful, but the absolute figures look small to the farmer who has worked \$200 land as a tenant until his hair is gray and who is still unable to make the first payment on the farm he occupies. The man in this position takes a trip to the cut-over country and finds an eighty-acre farm with thirty acres cleared and the remainder covered with second-growth, interspersed with occasional open grass spots connected by cow-paths. At first blush, before he has any idea of the cost of clearing the remaining fifty acres of brush land except the opinion given by the land agent, and without any knowledge of what a year's labor will yield on this farm, \$50 or \$60 an acre sounds cheap. It is within his means. The desire for a home of his own after many years of tenancy turns the balance quickly in favor of buying. Thus it is that a good deal of the savings of tenant farmers occupying high-priced land is used in getting homes on the lower-priced and less valuable land. While this tends to emphasize tenancy in the regions of high land values it provides the funds for developing new lands and

helps to maintain the percentage of landownership in the United States as a whole.

That this movement to cheaper lands in order to acquire landownership may have the best results for the farmers and for the country as a whole, the movement must be guided by people who know the possibilities of the land and who have no personal interest in any particular piece or kind of land. The dishonest real estate agent does much to retard this movement by levying a heavy tax upon the farmers who are so unfortunate as to fall into his hands. The honest, intelligent real estate agent who takes a professional interest in the upbuilding of his community is rendering a valuable service. Several states, through their immigration bureaus, are doing much to encourage the settlement of their sparsely settled regions by carrying on an educational campaign among those people who wish to move to newer and cheaper lands. Much more work needs to be done by these states in the way of establishing well-worked-out plans for settling the land on a basis profitable to the settler and to the state as a whole. This will not only increase the wealth of the country but facilitate the maintenance of the landowning farmer as the dominant class in American agriculture.

Gift and inheritance. . A vast amount of wealth passes on from generation to generation by gift and inheritance. Hence it is not necessary, in order to maintain the class of landowning farmers in a country where this class is already established, that each succeeding generation of farmers should save from the profits of their industry sufficient wealth to purchase their farms, and to hand this accumulated wealth over to the preceding generation of landowners. This would be necessary, however, in order to reestablish a class of landowning farmers in one generation in a country where landlordism has become universal. In England, where most of the land is owned by a comparatively small number of landlords, the estates are handed down from generation to generation and thus remain the property of the landlord class; and in that country it is unusual indeed for a tenant farmer to undertake to purchase

a farm. In Germany, where peasant proprietorship is the rule, the farms are handed down from father to son by inheritance, and thus the property is kept in the hands of the tillers of the soil. The conditions with respect to inherited wealth are, therefore, of great importance in determining the status of farmers with respect to landownership.

In the United States it is a matter of common observation that farmers who are able to do so, assist their sons in buying farms. This assistance may be relatively very great in the case of a wealthy farmer who has a small family; and again it may be very small in the case of a farmer in moderate circumstances, who has a large number of children among whom he wishes to distribute his assistance. Often the home farm is greatly enlarged by purchasing a "forty" here and an "eighty" there while the boys are growing to manhood, and then parceled out as the young men wish to establish homes for themselves. Again, when the parents are gone, the remainder of their accumulated wealth passes by inheritance to their sons and daughters and helps very greatly in the enlargement of their farms as their growing families make larger farms desirable.

The movement of population from country to city, which has been so great in recent years in this country, results in the transfer of a vast amount of wealth from the agricultural industry, which must be replaced from some source if the wealth of farmers is not to decline. The general principle may be thus stated: *The greater the amount of land and other forms of wealth acquired by one generation and transmitted to the farmers of the next, and the more evenly this wealth is distributed, the greater the ease with which the ownership of land may be acquired by the succeeding generations of farmers; but the larger the farm families of a given community, and the larger the percentage of each succeeding generation who seek a livelihood in other industries, the greater the amount of wealth which will be drawn from agriculture into other industries by gift and inheritance, and the smaller the part which inherited wealth will play in the acquisition of landownership.*

The number of persons employed in the various other occupations has increased much more rapidly than has the number engaged in agriculture. This is shown by the following table, which gives the proportion, of those engaged in all gainful occupations, which were employed in "agricultural pursuits."¹

TABLE XIV

DATE	PERCENTAGE ENGAGED IN AGRICULTURE
1820	87.1
1840	77.5
1870	47.5
1880	44.4
1890	39.2
1900	35.7
1910	32.9

Perhaps the most important explanation of this more rapid increase in the percentage of those engaged in other occupations than agriculture, is the transfer of a share of the agricultural population to the other industries. This has often been spoken of as the movement from the country to the city. Men who have long been farmers sometimes move to the cities and enter other occupations, but what is more significant than this is the movement of the farm boys from country to city. A large percentage of the boys who are brought up in the country are educated and sent into the city, where they enter occupations of every description. A large percentage of the men who control the industries of cities to-day were one-time farm boys.

This movement from country to city was especially rapid during the seventies and eighties for two reasons: First, agricultural methods were transformed by the introduction of labor-saving machinery, until a much smaller percentage of the total working population was required to produce the same supply per capita of food stuffs and raw materials. Second, the

¹ Twelfth Census of the United States, 1900, Special Reports, Occupations, pp. xxx, 1.

manufacturing industries have been developing rapidly during the same period, giving opportunity for a share of the increasing farm population to find remunerative employment in the industries of the cities. To quote Dr. A. C. True, "Between 1870 and 1890, speaking relatively and in round numbers, two million men gave up farming and went to join the great army of toilers in our cities. Taking their families into account, six million people from the farm were added to the population of the town. . . . Men leave the farms because they are not needed there. The introduction of labor-saving machinery and rapid transportation has produced the same result in agriculture as in manufactures. A smaller number of men working in our field turns out a much greater product than the greater number of laborers could possibly secure in olden times, and the producers of all lands are easily carried where they are needed. . . . Within the past twenty-five years, invention has gained the mastery in agriculture as in other arts. The brain of man has triumphed over his hand here as elsewhere."¹

If only the poor moved from country to city, the total wealth of the country would be affected but little by this movement of population. But the rich farmers are quite as apt to move to the cities as are the poor ones, in fact they are perhaps more likely to do so, for they are in a position to live from the rent of their farms, as many retired farmers are doing in nearly every town of the country. The sons of the well-to-do farmers are more likely to receive an education and to be attracted to other pursuits than are the sons of poor farmers; on the other hand, it may be true in many cases that the son of a poor farmer would be more likely to seek employment in the city because his chances of getting a start in the country are not so good as those of the young man with a well-to-do father to aid him.

This stream of population is carrying a vast amount of wealth from country to city every year. This movement of wealth from country to city has rightly been given as one cause of an increase in the percentage of tenancy, for it transfers to the city the owners of many farms, and these farms are cultivated

¹ A. C. True, "The Arena," Vol. XVII, pp. 538-539.

by tenants until some farmer is able to acquire its ownership by transferring to the city owner an equivalent amount of wealth.

Thus while gift and inheritance are economic conditions of great importance in determining the status of farmers with respect to landownership, and make any rapid change in their status in this regard impossible, some other means of accumulating wealth must be available if the present percentage of landowning farmers is to be maintained. This leads to the investigation of savings in agriculture as a means of acquiring landownership.

Savings. The process of saving from the earnings of many years and making a purchase is a means of acquiring landownership which is of especial significance in the consideration of the conditions which make it possible for tenant farmers to become landowners. The majority of the tenants are able to save from their earnings, because their net returns are more than enough to cover the expenses of living. When long periods of time are taken into consideration, the prices of agricultural products tend to be such that the total product of the least capable farmer who can remain permanently in the business will equal his cost of living and all other annual expenditures, including rent and normal returns on permanent investments. This is true partly because long-time-average prices are a most important factor in determining the degree of efficiency which is necessary for making a living by farming, and all who do not prove themselves efficient to that degree must leave agriculture to those who are more capable; again, it is true partly because the long-time-average price must be such as will encourage the production of sufficient produce to supply the effective demands of the people, and the least capable farmer who is required to produce this supply must receive prices which will enable him to live in accordance with his idea of a living, to pay rent, wages (unless he and his family do all the work, in which case this item is included in a living), wear and tear on machinery, and normal returns on permanent investments.

It is true, certainly, that, at any given time, there are those who are producing at a loss, others who are just able to make

both ends meet, and still others — and ordinarily this class includes the vast majority — who are able to make an extra profit because of their superior ability.¹

This differential gain, or profit due to superior ability, is the condition which, even where gift and inherited wealth are insignificant, makes it possible for farmers to accumulate wealth and to become the owners of farms. It is true, certainly, that the more efficient may live much better than the least capable, or marginal farmers, and thus the habits of life may reduce the power of the more efficient farmers to save from their profits. But the condition which gives rise to this differential gain certainly makes it possible for the more efficient tenant farmers to buy land.

The greater the number of those who have gained a degree of efficiency above that of the marginal farmers and the greater the difference between the degree of efficiency of the majority of farmers and that of the marginal farmers, the greater is the differential gain which will go to farmers as personal profits, and the better able they will be to become landowners. On the other hand, the more homogeneous the farmers who supply the market, that is, the smaller the number who have gained a degree of efficiency above that of the marginal farmer and the less this degree of difference, the smaller is the total differential profit and the less able are tenant farmers to accumulate sufficient wealth to buy farms.

Credit. It is a common practice in the United States for farmers to borrow money to invest in land. When a young man has saved enough money to pay some share, say half or two-thirds of the price of the farm, he borrows the remainder and makes an investment, a mortgage being given to secure the loan. This enables the farmer to buy land much sooner than he could if he were required to save the entire amount before making the purchase. Where the rate of interest charged is not too high, it is often more desirable to pay interest than to pay rent; for the difficulty of adjusting the relations between the landlord and tenant is in this way removed, and the farmer

¹ For details on this point see Chap. XII.

is free to improve the land as he chooses, knowing the benefits will be his own.

Farm mortgage indebtedness was first reported by the United States Bureau of the Census for 1890. At that time 28.2 per cent of the farms operated by their owners were mortgaged. In 1900 the percentage was 31, and in 1910 it was 33.6. The total encumbrance reported was \$1,085,995,960 in 1890 and \$1,726,172,851 in 1910. The former represented 35.5 per cent of the value of the mortgaged farms, while the latter represented only 27.3 per cent. The lower rate is explained by the fact of increased land values.

Throughout the southern states, where the percentage of tenancy is high, the percentage of mortgaged farms is low as compared with the percentage in the North, where the mortgage is used largely as a means of acquiring landownership on the part of young men. At the same time retiring farmers favor the plan of selling the farm and leaving a large share of its value in the land, taking a mortgage for security. This not only facilitates the climbing of the agricultural ladder on the part of the young farmer, but it aids the old farmer in making a safe retreat from the farm, giving him plenty of time to familiarize himself with other forms of investment before withdrawing his funds entirely from the form of investment which he understands.

The extent to which mortgages are given to cover a part of the purchase price is illustrated by the following quotation taken from a special study made in connection with the census for 1890:

"As a result of inquiries made in 102 selected counties, distributed throughout the United States, the conclusion is that 80.13 per cent of the mortgages in force were made to secure the purchase price of real estate and to make real estate improvements, when these objects are not complicated with other objects, and that the original amount of these mortgages is 82.66 per cent of the total original amount of all mortgages in force. If to these objects are added the objects of business and the purchase of various articles of personal property of the more durable kind, such as domestic animals, wagons, farm

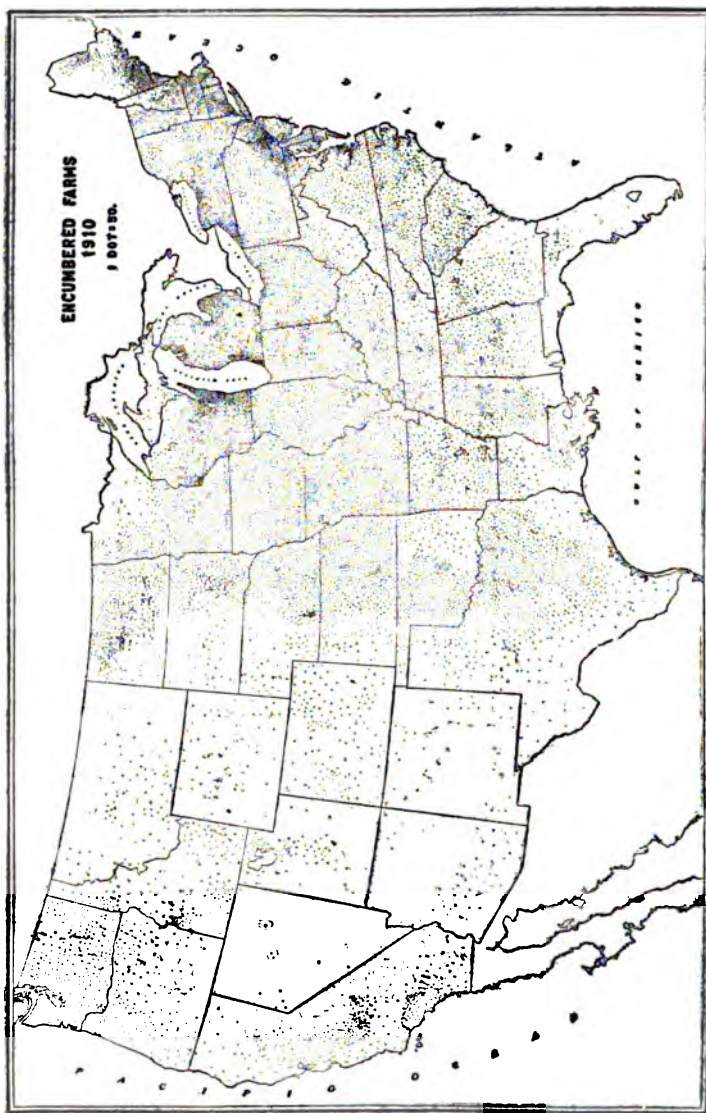


FIGURE 11.

machines, when not combined with other objects, the mortgages are 89.82 per cent of the entire number in force, and their original amount is 94.37 per cent of the total original amount of all mortgages in force. . . . The mortgages distinctly representing a loss of wealth, or wealth soon to be consumed, are embraced in the description of farm and family expenses, and their number is 5.4 per cent of the total number of mortgages in force, while their original amount is 1.73 per cent of the total original amount. . . . A distinction must be observed between the cause and the consequence of mortgages. The mortgage, in its motive, is for the most part a mere business venture, and, so far as foreclosures show, for the most part a successful one. It becomes a misfortune when for any reason it becomes a business mistake."¹

These figures, it is true, refer to real estate mortgages generally; but there is no reason for thinking that the mortgage is used for other purposes than the securing of the purchase price of real estate in the case of farm mortgages more frequently than in the case of other real estate mortgages. In general, we would be inclined rather to think that farm mortgages were more likely to be given to secure the purchase price than the mortgages on city lots, for example, where the total value of the lot might be relatively small compared with the value of the business which might be established thereon, and which might be an occasion for desiring to mortgage the real estate to secure funds to extend the business. In general, the conclusion which should be drawn seems to be that the mortgages on farms are in the vast majority of cases used as a means of making the transition from tenancy to landownership, and are frequently an evidence of growing prosperity.

The evidence seems to show, also, that the farmers are usually successful in their use of the mortgage as a means of acquiring the ownership of land. In Illinois, Michigan, Minnesota, and New Jersey, from one-third to one-half per cent, only, of the farm mortgages are foreclosed each year;² and the average duration of farm mortgages in the United States is about five

¹ Eleventh Census of the United States, 1890, Report on Real Estate Mortgages, p. 310.

² George K. Holmes, *Quarterly Journal of Economics*, 1896, Vol. X, p. 49.

years.¹ From this we may conclude that in the above-named states not much more than from one and two-thirds to two and one-half per cent of the farm mortgages are foreclosed. But we cannot argue from this that from ninety-seven and one-half to ninety-eight and one-third per cent of the mortgages are duly paid, out of the profits of agriculture. Many cases will come to the mind of the reader, where the unsuccessful aspirants to landownership have sold their mortgaged farms in order to pay off the mortgage and save a part of their original investment. However, it is fair to say that the vast majority of such adventures prove successful.

A classification by age groups of the owners of farm homes, in the United States, may be obtained for the years 1890 and 1900, which gives the percentage of the owned farm homes which are encumbered. This classification is shown in the following table:²

TABLE XV

THE PERCENTAGE OF OWNED FARM HOMES WHICH WERE KNOWN TO BE ENCUMBERED, IN THE NORTH CENTRAL DIVISION, IN 1890 AND 1900, CLASSIFIED BY THE AGE OF THE OWNERS

AGE	PERCENTAGE ENCUMBERED	
	1890	1900
Under 25 years	40.7	43.6
25 to 34 years	49.5	48.3
35 to 44 years	49.1	48.3
45 to 54 years	44.5	41.5
55 years and over	32.1	32.2

From these figures it will be seen that the percentage of encumbrance increases from youth to middle age, and declines from middle age to old age. This fact, and also the relation between the increase in the percentage of mortgages and the decline in the percentage of tenancy, is shown more clearly in

¹ Eleventh Census, Report on Farms and Homes, p. 109.

² These figures were calculated from the Report on Farms and Homes for 1890, and from Vol. II of the census for 1900.

the following table in which the one state of Illinois is considered, Illinois being the one of the northern states in which the percentage of tenancy is the highest :

TABLE XVI

THE PERCENTAGE OF OWNED FARM HOMES WHICH WERE KNOWN TO BE ENCUMBERED, AND THE PERCENTAGE OF ALL FARM HOMES WHICH WERE KNOWN TO BE HIRED, IN THE STATE OF ILLINOIS, FOR THE YEAR 1900

AGE	ENCUMBERED HOMES	HIRED HOMES
Under 25 years	40.1	74.64
25 to 34 years	47.9	63.25
35 to 44 years	46.2	42.50
45 to 54 years	38.8	29.8
55 to 64 years	31.2	18.29
65 years and over	21.9	10.60

When we consider the mortgage in all of its relations it is apparent that this is one of the important means of acquiring landownership; and while it sometimes proves disastrous, it is practically indispensable in our rural organization, and on the whole it may be looked upon as an institution favorable to the interests of the farmer.

Credit systems have an important influence upon the percentage of tenancy in a county. This is illustrated by the experience of Germany.

Tenancy in Germany is largely among the occupiers of the very large and of the very small farms. This is shown in the following table:

TABLE XVII

PERCENTAGE OF THE FARMS OF VARIOUS SIZES IN GERMANY WHICH WERE COMPOSED SOLELY OF LEASED LAND, IN 1895

Under 5 acres	19.91
5 to 12.35 acres	3.54
12.35 to 49.4	1.97
49.4 to 247 acres	4.64
247 acres and over	25.68

Not only is the percentage of tenancy low, but the statistics fail to prove any important change in this regard in recent years. In 1882, 15.71 per cent of the farms were composed solely of leased land, and in 1895 the percentage was 16.42; but at the same time, 12.88 per cent of all land in farms was leased land in 1882 and only 12.38 per cent in 1895. It would appear, therefore, that there was little change in the status of the farmers with respect to landownership during this period. Indeed Germany is a nation of landowning farmers, while in France 47.2 per cent of the cultivated area is occupied by tenants, and in England the landowning farmer is rarely found.

Not only is it important that the young farmers who wish to go in debt for land should be able to borrow money at a low rate of interest, but it is equally important that the tenant farmers should be able to invest their savings in a profitable manner, until they have accumulated sufficient capital to enable them to invest in land. Furthermore, it is especially important that farmers who have accumulated funds beyond what they can use in their farming activities be provided with a safe investment other than land, lest they continue to buy farm after farm just as a safe investment, and in this way force the price of land too high for the young farmer. The remedy is to make it easy for every farmer to invest his surplus in federal farm loan bonds which pay a higher rate of return than farms let to tenants have been paying in the region of high land values.

Integrity as a source of income. The young farmer wants to become the owner of a good farm with fine buildings and splendid equipments. In these days of high land values, this requires a large sum of money. Few can hope to acquire the desired farm by inheritance or even by marriage. These are both poor ways to acquire a farm, for if the farm should come by these means, the pleasure of earning it would be lost, and with it one of the greatest joys of life.

Those who have made calculations upon the time required to earn and save the modest fortune required in these days to own a farm have too often left out of account certain very

important sources of income. It is a matter of common observation that the income of one man is often very much larger than that of another. There are those who are much inclined to attribute this to unfair dealing. The difference is due in a great measure to the fact that some men have more sources of income than others.

There are four important sources of income: labor, managerial activity, integrity, and capital. The man who depends upon labor alone will have, as a rule, but a small income. It is when ability as a manager and integrity as a man begin to yield their income that the young man gets ahead rapidly.

It has often been said, the first thousand dollars is the hardest to accumulate. This is true because it must be saved almost wholly from one source of income, — labor. From this one source of income must be provided food, clothing, and shelter for the worker, before anything can be put aside as savings. Add another important source of income and accumulation by saving becomes easier.

The importance of integrity as a source of income cannot easily be overestimated. There are two ways of realizing upon integrity. Most men are willing to assume a certain amount of integrity on the part of young men. A young man can sometimes take advantage of the fact and, by dishonest actions, realize a small return once for all. It is not this method of realizing upon one's stock of integrity that is to be dwelt upon here. The way to derive an important financial return from one's reputation for integrity is not to sell out but to continually acquire more stock.

Reputation for integrity gives the opportunity for the young man with little capital to realize upon his managerial activity. There are many owners of farms who, having grown old farming, are willing to turn their entire capital over to the management of a trustworthy young man. By working as a hired laborer on a farm, a young man may establish such a reputation for integrity that the owner of the farm will turn over the entire management of the farm and equipment to him as a tenant instead of as a directed hireling. The writer knows cases where

this has resulted in an increase in the income of a young man from thirty dollars a month and board to a thousand dollars a year. Integrity gives opportunity to realize upon one's managerial ability by operating the capital which belongs to others.

How should one inventory his resources? The capitalist values his stocks according to the income they yield. If a given certificate of stock yields \$60 a year, and the correct rate of interest is 6 per cent he will value the stock at \$1000. This is the capital value of the stock. If a young man can increase his annual income \$360 by establishing a reputation for integrity, and thus securing an opportunity to manage the capital of others, why should he not look upon this stock of integrity as the capitalist does his stock? It would take \$6000 loaned at 6 per cent to yield \$360 annually. In counting his net worth at any given time the young man may well capitalize his integrity. It is better to overestimate than to underestimate the economic value of simple honesty as a resource, and as a source of income from which it is easy to save money and buy a farm.

Taxation. It has been noted by economists that the market price of land is often greater than the capitalization of the net rent at the current rate of interest. That is, men are willing to take a lower return on investments in land than on loans, even where the security is a farm mortgage. This is said to increase the difficulty of paying off farm mortgages. The man whose farm is mortgaged must pay, for example, 6 per cent for the use of money which, as an investment in land, is yielding him no more than 4 per cent.

With the Ricardian theory of distribution in mind, which assumes that all farmers possess the same degree of efficiency, economists have concluded that this discrepancy between the net rent and the interest would make it practically impossible for the farmers to pay off their mortgages. It will be readily understood from the discussion of *profits due to superior ability*, that all but the less efficient farmers are able to counterbalance this loss by earning personal profits, so that the fact of the

discrepancy is not so disastrous as has been supposed by the economists; yet this discrepancy has an important retarding influence upon the movement from tenancy to the unencumbered ownership of land.

This difference between net rent and interest is due to many causes. Many of these causes have already been discussed in the chapter on the price of land; but we wish to emphasize especially the influence of double taxation in this connection. Double taxation, the taxing of both the farm and the mortgage upon the farm, tends to increase the difference between the rate which must be paid upon the loan and the returns received upon investments in land. The man who lends money upon a mortgage wants at least as large a return as if he had purchased the land himself. Had the man who lent the money purchased the land and rented it, he would have paid the land tax out of the net rent. If he lends the money and has to pay tax at the same rate on the mortgage, he will demand interest equal, at least, to the net rent of that proportion of the farm represented by the face of the mortgage. This means that the farmer will have to pay interest equal to the net rent and then pay the land tax besides; thus paying more in interest and in the tax, by the amount of the tax, than he would have paid as a tenant. To tax a farm mortgage is, therefore, to tax a farmer for using the mortgage as a means of acquiring landownership.

While double taxation retards the farmer in acquiring landownership, there are forms of taxation which facilitate this rise in his status. Wherever there is a tendency for wealthy men to buy farm after farm from their superabundance of income, their bidding against the farmers drives the price of land too high and thus forces men to remain tenants who would be better farmers, better citizens, happier because they are paying out on a purchased farm. To discourage this outside competition which inflates prices and depresses farming, a *progressive* land tax is suggested. The essence of this tax is that the more land one owns beyond one farm of a specified maximum area, varying with the quality of the land, the higher the tax rate which is levied upon the land. When properly administered such a

tax will tend to keep the land on the market for those who wish to use it at a price not so far from its use value, and in this way facilitate land buying on the part of farmers. It is not at all necessary, in order to secure this result, that the tax be confiscatory. A slight discrimination against large holdings is sufficient to produce the desired result.

Gift, inheritance, and profits, aided by a good credit system, are the most important means of acquiring the ownership of land. Now that the government has practically exhausted its supply of good farms, and competition is driving the price of land higher and higher, it becomes more and more important that every facility be provided the farmer for making the most of the means which yet remain for acquiring the ownership of land. The farmer should have every facility for acquiring a knowledge of the facts and principles which underlie his art, in order that he may so operate his farm as to win large profits from which to save money to invest in land.

PROBLEM ILLUSTRATING THE FOREGOING PRINCIPLES

1. Four farmers, A, B, C, and D, are in competition for four grades of land, 1st, 2d, 3d, 4th. The following figures represent the value of the produce which the farmers of each grade can produce on the land of different grades as a result of the expenditure of six dollars' worth of labor and capital:

GRADES OF FARMERS	GRADES OF LAND			
	I	II	III	IV
A	13.5	12.	10.5	9
B	12.	10.67	9.33	8
C	10.5	9.33	8.17	7
D	9.	8.	7.	6

(a) How much differential rent would be paid for the amount of land employed in each case (allowing 5 cents as a margin in each case)?

(b) Supposing that the six dollars are expended upon one acre in case of the fourth grade land, and that the third grade land is farmed

5 per cent more intensively than the fourth grade, and the second grade 10 per cent, and the first grade 15 per cent more intensively than the fourth grade, how much would the rent per acre be on each grade of land?

(c) Supposing that the net rent is 90 per cent of the gross rent, and that the current rate of interest on safe loans is 5 per cent, what would be a fair capitalization of the income of each piece of the land?

(d) Supposing that all farmers live equally well, and leaving out of account the influence of variations in capacity, how long would it take each man to pay for the land which he cultivates by saving from his profits if the land can be purchased at its capital value? How long if speculation has driven the price of land 50 per cent above its capital value?

(e) How would problem (d) be affected if the tenant could get only 4 per cent interest on his savings and has to pay 6 per cent on borrowed money, on the assumption that he buys the farm when he has saved enough to pay half the price?

CHAPTER XX

TENANT FARMERS IN THE UNITED STATES PRIOR TO 1880

PRIOR to 1880 there were no statistics relating to tenancy and landownership in the United States. Regarding this period our knowledge must be based upon such statement as can be found in the literature of the period. Such material is unsatisfactory but in the absence of anything more reliable should be used. A little evidence is better than none even if it serve only to emphasize the lack of knowledge and to discourage the making of unwarranted assumptions. A wide range of opinion has been expressed regarding the prevalence of tenancy in the United States prior to 1880. One writer expresses the belief that at one time all farmers were landowners and that there had been a gradual decrease in the percentage of landownership on the part of farmers,¹ while another writer has expressed the conviction that the percentage of the tillers of the soil who own the land they cultivate has greatly increased since the middle of the nineteenth century.² It is doubtful if either of these positions can be proved to the entire satisfaction of all students of the question.

It is the purpose in this chapter to piece together the evidence of tenancy in the United States prior to the first census report

¹ *North American Review*, Vol. 142, p. 393.

² Twelfth Census, Vol. V, p. lxvi. In justice to the author of the statement referred to in the census, let it be made clear that landowning farmers are compared in importance not with tenant farmers but with all tillers of the soil other than landowning farmers. That is, tenant farmers and farm laborers have been thrown together, and the claim made that this class of non-landowning tillers of the soil has not increased so rapidly as the landowning farmers. It was not contended that the percentage of tenant farmers had not increased but that the percentage of laborers had decreased more than enough to counterbalance the increase in tenancy, that the change was between these two classes, and that increased tenancy did not mean a decrease in the importance of landownership on the part of those engaged in farming.

on the subject. The American farmer of the last quarter of the eighteenth century was as a rule owner of the land he tilled. While in England the term "farmer" was used at that time to designate a tenant farmer, in America the term had come to imply landownership. There were many reasons for the prevalence of landowning farmers and the scarcity of tenant farmers in America. The system of inheritance helped to maintain the class of landowning farmers. An agricultural writer of the period remarked: "The little freeholders who live upon their own property make much the most considerable part of the whole province [of New England]. These are the posterity of former settlers, who, having taken in tracts of waste land proportioned to their ability, have died and left it to their descendants equally divided among all the children, by the gavelkind custom, which is prevalent throughout this province."¹

High wages, accompanied by low land values and the possibility of taking up new land, made it relatively easy for the poor man who was industrious to rise to the position of landowning farmer. It could then be said that "the evening of an industrious life is universally that of a little planter in the midst of all necessities." "Their farms yield food, much of clothing, most of the articles of building, with a surplus sufficient to buy such foreign luxuries as are necessary to make life pass comfortably, there is very little elegance among them, but more of necessities a greater capability of hospitality, and decent living than is to be found among the few remains of their brethren in England."²

The self-sufficing character of the farm economy made it possible in spite of poor means of transportation for the farmer to go into the wilderness and carve out a home. The amount of money acquired to settle upon new land in the early days varied greatly. "In general, the settlers [in New York] come with a small sum of money, very many of them with none at all,

¹ "American Husbandry," Vol. II, pp. 66 and 67. An anonymous work describing American agriculture, published in 1776.

² *Ibid.*, Vol. I, pp. 72, 68.

depending on their labor for three, five, or seven years to gain them a sum sufficient for taking a plantation, which is the common case of the foreign emigrants of all sorts. It is common to see men demand, and have, grants of land, who have no substance to fix themselves further than cash for the fees of taking up the land; a gun, some powder and shot, a few tools, and a plow. They maintain themselves the first year like the Indians, with their guns and nets; and afterwards by the same means with the assistance of their lands; the labor of their farms, they perform themselves, even to being their own carpenters and smiths; by this means, people who may be said to have no fortunes are enabled to live, and in a few years to maintain themselves and families comfortably. But such people are not to be supposed to make a profit in cash for many years, nor do they want or think of it."¹

"The new settlers [in New England] . . . enter at once into the class of freeholders, but from poverty in the beginning of their undertakings fall naturally into a class below [the older landowning farmers] unless they begin with a considerable sum of money that raises them in the consideration of their neighbors. There are many of these who begin with such small possessions, that they are some years before they can gain the least exemption from a diligence and active industry that equals any of the [tenant] farmers of Great Britain. Such men, although they may be in the road of gaining as comfortable a living as any of the old freeholders, yet rather fall into an inferiority to them; not from the manners or constitution of the colony, but from modesty and the natural exertions of a domestic industry."²

"The new settlers upon the uncultivated parts of Pennsylvania fixed upon the spot where they intend to build the house, and before they begin it, get ready a field for an orchard, planting it immediately with apples chiefly, and some pears, cherries, and peaches. This they secure by an enclosure, then they plant a piece for a garden; and as soon as these works are done they begin their house; some are built by the countrymen with-

¹ "American Husbandry," Vol. I, p. 122.

² *Ibid.*, Vol. I, p. 70.

out any assistance, but these are generally very bad hovels; the common way is to agree with a carpenter and mason for so many days' work, and the countryman to serve them as a laborer, which, with a few irons and other articles he cannot make, is the whole expense; many a house is built for less than twenty pounds. As soon as this work is over, which may be a month or six weeks, he falls to work on a field of corn, doing all the hand labor of it, and, from not yet being able to buy horses, pays a neighbor for plowing it; perhaps he may be worth only a calf or two and a couple of young colts, bought for cheapness; and he struggles with difficulties until these are grown, but when he has horses to work, and cows that give milk, and calves, he is then made, and in the road to plenty. It is surprising with how small a sum of money they will venture upon this course of settling."¹

"Those who have money enough to stock a farm, have enough to settle a tract of waste land, which is much more flattering than being the tenant of another; one would suppose that such a circumstance would prevent their being a tenant in the country; but this is not the case, low rents and accidents sometimes induce them to live rather than to settle."²

While it was possible for those who dared brave the hardships and dangers of pioneer life to acquire homes with little money, conditions were somewhat different if the young man or the old settler wished to live in the older and well-settled communities. In 1775 the best lands near Boston and Philadelphia would rent for five dollars per acre, and estates near Philadelphia were sold for \$125 per acre.

These high values were exceptional, however, and only a short distance back from the cities land values were relatively low. Besides the dangers and privations on the frontier and the fact of high land values near the cities, there were in these northern states men of the type of the English country gentlemen, who wished to own lands and live from the rents. This helps to explain the fact that there were tenant farmers in America in the eighteenth century. While the tenant farmers were the

¹ "American Husbandry," Vol. I, pp. 190, 191.

² *Ibid.*, Vol. I, p. 63.

exception, they were present, especially in the older settled districts and near the cities, in appreciable numbers.

That the tenant farmers were as a rule young men using tenancy as a stepping stone to the position of independent landowning farmers, as is the case to-day, is evident, but the typical landlord of New England and Pennsylvania of the eighteenth century was not the retired farmer of to-day, but a "country gentleman" of the English type.

"The most ancient settled parts of the province (New England) which are Rhode Island, Connecticut, and the southern part of New Hampshire, contain many considerable land estates upon which the owners live much in the style of country gentlemen in England. They all cultivate a part of their estates; and if they are small, the whole; this they do by means of their stewards, who are here generally called overseers; the rest is let to tenants who occupy their farms by lease, in the same manner as in the mother country; the rents paid for such farms being the principal part of the landlord's income."

"There are some country gentlemen in Pennsylvania who live on their estates in a genteel and expensive manner, but the number is but small; many are found who make much such a figure as gentlemen in England of three or four hundred pounds a year, but without such rental; for money is scarce in this country, and all the necessities and conveniences of life cheap."

"The method of living in Pennsylvania in country gentlemen's families is nearly like that of England; the only business is to ride about the plantation now and then, to see that the overseers are attentive to it; all the rest of the time is filled up with entertaining themselves; country sports, in the parts of the province not fully settled, are in great perfection; they have hunting but their horses are unequal to those of England; shooting and fishing are much more followed, and are in greater perfection than in England."¹

In New England, where country gentlemen seem to have been more numerous than in other parts of the North, it could be said, in 1775, "There are more estates that are under the

¹ "American Husbandry," Vol. I, pp. 62, 185.

management of overseers than that are let to tenants." This was doubtless due to the scarcity of men willing to be tenant farmers. The country gentlemen often turned to the exploitation of the timber resources lying about them, as a means of increasing their incomes as well as enlarging their agricultural domains. "The gentlemen of New England have an opportunity of constantly increasing their estates. Those of fortune erect sawmills on their new grants, by which means they are enabled to make a very considerable profit by the woods at the same time that they lay the foundation of future estates for their posterity."¹

It is evident that the "country gentlemen," — that is, men who were striving to live after the fashion of the smaller landlords of England who lived in comfort and even in some degree of elegance without putting their own hands to the plow, — were more conspicuous than were the tenant farmers. Yet there were tenant farmers in America on the birthday of our nation.

The author of "American Husbandry" gives but slight information as to the methods of renting land. Tenants are spoken of in New England as occupying "their farms by lease, in the same manner as it is in the mother country." There is evidence that in 1775 rents near Boston and Philadelphia were paid in cash. But as early as 1795 Richard Peters was letting land near Philadelphia on a share system of tenure comparable to the system now in use in the dairy belts of the United States, which he thought more desirable than the cash system followed by others. The tenant furnished the implements of husbandry and the work horses, while the dairy cows, hogs, and sheep were owned jointly and fed from the undivided products of the farm. The horses were fed from the undivided hay but were fed from the tenant's share of the grain. The taxes were shared equally by landlord and tenant. The cost of clover seed, and of commercial fertilizer, was shared equally.²

In 1829 Moses Greenleaf, in his survey of the state of Maine,

¹ "American Husbandry," Vol. I, pp. 65, 66, 109.

² *Memoirs of the Philadelphia Soc. for promoting Agri.*, 1811, sections XLV-XLVII.

wrote of the various forms of share tenancy as follows: "In Maine, as in other parts of New England, the easy rates at which lands hitherto have been obtained in fee simple, and the scarcity of laborers, compared with the quantity of land to be occupied, have rendered it in general difficult to obtain rents for land. In some such instances it has been a custom for the landlord to furnish the implements, cattle, half of the seed, and pay half the taxes, and to receive half the products; in others, the tenant furnishes the whole of these except the taxes; and in some the landlord and tenant furnish different proportions according to circumstances. In most cases it is considered that one half of the crops, deducting one half the value of the seed and taxes, pays the expense of cultivation." ¹

There was never a time in the nineteenth century when tenant farmers could not be found in some parts of the United States.

In 1821 the lands held in large tracts by landlords were rarely farmed by hired managers and laborers, but had long been in the hands of tenants.² About the same time a writer from Prince Georges County, Maryland, was advising "leasing lands for a term of years."³ In 1829 "yearly tenancies" on estates of non-resident landlords was mentioned as a cause of the absence of good agriculture in Bedford County, Pennsylvania.⁴ In 1833 this statement appeared in the *American Farmer*, published at Baltimore, "Our farming tenantry are, literally speaking, an itinerant community."⁵ A farm of 360 acres in New Castle County, Delaware, was reported as having been let to tenants continuously from 1669 to 1832. The rent, in the latter part of the period, was paid in kind but was a stipulated quantity of each grain grown, not a share of the crop.⁶

In 1843 B. J. Goldsborough, of Cambridge, Maryland, made the statement: "A large proportion, say two-thirds, if not three-fourths of the farmers own the land which they till. . . . The modes of renting or leasing land are various; in fact, we have

¹ "A Survey of the State of Maine," p. 206.

² *American Farmer*, Vol. II, 1821, p. 10.

⁴ *Ibid.*, Vol. XI, 1829, p. 130.

⁶ *Ibid.*, Vol. I, 1846, pp. 232-233.

³ *Ibid.*, Vol. I, 1821, p. 297.

⁵ *Ibid.*, Vol. XV, 1833, p. 9.

no well-defined system of any kind. A lease for more than two or three years is a rare thing. There is but little of the English system here, and but little land that is leased for money rent. The only settled thing seems to be that the tenant shall have house rent, fuel, pasture, and fodder for a cow or two, and a patch, not exceeding an acre, for a garden and a few potatoes. Sometimes the tenant gives only his labor for one-fourth of the crop, the landlord being to all the expense of teams, utensils, feed, etc. Then again the tenant furnishes these, getting one-half or two-thirds, according as the bargain may be respecting taxes, improvements and other matters."¹

An 80-acre farm three miles from Mt. Holly, Burlington County, New Jersey, was rented from 1854 to 1859 for a cash rental of \$600 per annum. Another farm of 70 acres rented on shares yielded the owner \$800 in one year, which was thought to be no more than the average. These were not truck farms but depended on grain, stock, potatoes, and fruit.²

In 1864, potato land near Chicopee in the Connecticut Valley was rented for \$20 per acre.³

That there were tenant farmers in the older settled parts of the country at the close of the eighteenth century was made clear in the last chapter, but tenancy was not confined, at that time even, to the regions long settled. In 1799 a young man 21 years of age went from New England to Oneida County, New York, to make his way by farming. The country was then new, and having no money with which to buy land he entered into an agreement with a landowner to clear land for "the first crop and ashes," with board and team furnished by the landlord. With this opportunity as a starting point the young man came in time to be the owner of a farm of 250 acres, and this was done without leading a parsimonious life, for his country-life ideal was expressed as follows, "My determination in the first place was to live pretty well, and if we could lay up anything against old age to do so."⁴

¹ *The Cultivator*, 1843, Vol. X, p. 113.

² *Country Gentleman*, 1859, Vol. XIII, p. 42.

³ *Ibid.*, 1865, Vol. XXVI, p. 283.

⁴ *Ibid.*, 1851, Vol. IX, p. 210.

The letting of land to a tenant who agrees to bring it into cultivation for all he can make on it for a given period of time has been practiced continuously in the undeveloped sections of the United States and is in use to-day. An interesting illustration is found in the method used by N. Longworth, near Cincinnati, in 1845. A small vineyard was let to a German tenant for half the proceeds on condition that the tenant would "trench, bench, and wall the south side hill and plant in grapes" two acres per year for three years. Longworth said this work was worth \$300 per acre. He said also that the thirty-five acres occupied by the tenant and which had three acres of grapes at the beginning of the tenancy, cost him \$630. Obviously the German tenant, ignorant of American conditions, had paid dearly for the use of cheap land. Longworth said, "I made a hard bargain with him."¹ And no one can question the statement.

Longworth is not the only name connected with national politics to-day which was related to the tenant farmer of the first half of the nineteenth century. The Wadsworth estate in the Genesee Valley, with headquarters at Geneseo, N. Y., has been occupied in part by tenants for more than a hundred years.²

In 1835 the tenants on the Wadsworth estate gave one-third of the crops as rent, and defrayed all the expenses of cultivation.³ In 1841 Captain Barclay visited Geneseo. His Journal gives a more detailed picture of the tenant system on the Wadsworth estate, which can best be given by quoting:

"I arrived at Geneseo about nine o'clock in the evening of the 20th of May, 1841. . . . Next morning I called on Mr. Wadsworth, one of the largest if not the most extensive landowner in the State of New York, to whom I had brought a letter of introduction. He lives in a fine house exactly resembling that of an English squire, picturesquely situated on a rising ground and commanding views similar in character and not excelled in beauty by the prospects from Richmond Hill or Windsor Castle. His family consists of two sons and a daughter, one of the former married and residing about a mile off; the other son and the young lady living with their father.

¹ Contribution by N. Longworth, U. S. Patent Office Report, 1845.

² *Breeders' Gazette*, Vol. 54, p. 255.

³ Adby's "Tour in North America," Vol. I, p. 277.

"When I called the family were from home, but in a few hours Colonel Wadsworth, the younger son, visited me, in a most open and kind manner pressingly invited me to take up my residence at his father's house, an invitation which I accepted.

"I found the elder Mr. Wadsworth the very beau ideal of a fine old English country gentleman: tall and graceful in person, and in manners courteous, affable, and hospitable.

"Mr. Wadsworth's property comprises about forty miles of country, the richness and picturesque appearance of which it is impossible in adequate terms to describe. Of this property Colonel Wadsworth occupies 1600 acres, 1000 of which, in the Genesee flats, are alluvial meadow land equal to any in the vales of Aylesbury and Buckingham.

"Mr. Wadsworth has a numerous tenantry, but under a tenure which can yield neither profit to the landlord nor benefit to themselves; they have no leases, but plow and sow from year to year, the landlord receiving for rent a portion of the produce in kind. His portion is ascertained on the field after the crop is reaped, and is delivered by the tenants at an appointed barn where it is instantly threshed out and the straw given to the winds. Such a system must be a bar to every improvement; it in fact operates as a prohibition of all exertion and expenditure by the tenant for increasing the fertility of his farm, it being unreasonable to expect that any tenant will use exertions or lay out capital, where the landlord is to reap, certainly a large share of the benefit thence accruing, and from the precariousness of the tenure perhaps the whole. Mr. Wadsworth therefore may go on to draw his share of the pittance of grain which his tenants may under present circumstances be able or disposed to raise, but he must lay his account that in these circumstances nothing can be done by them to improve the soil and render it duly productive. . . .

"Now, although Mr. Wadsworth is an acute well-informed man who must have seen well and far before him, having at an early period made an extensive purchase of land at a price greatly under the value to which time and circumstances have raised it, yet it appears to me he is much wedded to old customs, otherwise he would at once perceive the advantage of dividing his estate into farms of a proper size, erecting on them suitable buildings, and granting leases for such a term of years as would insure to the tenants a return for money expended on improvements. By similar means and by establishing and stipulating for judicious modes of culture, the value of

land in Scotland has in my own time been tripled; and I have no doubt that by adopting them the value of Mr. Wadsworth's property would be increased in the same ratio; but I was unable by this argument or by any other to persuade him to change his system of tenancy."¹

This criticism by Captain Barclay, made in the face of the fact that he had been entertained in the house of this American country gentleman of the English type requires some explanation. The original James Wadsworth of Geneseo, while traveling in Europe in connection with the sale of lands in western New York, formulated the plan of establishing himself in the Genesee Valley after the fashion of an English landlord. It is fair to assume, therefore, that he was not without knowledge of the English system of leasing land. That he should have modified his system to conform to American conditions is a mark of his sagacity. Furthermore at the time when James Wadsworth was falling in love with the English landed estates, letting land from year to year was the rule in England, but a cash rent was the rule instead of a share of the crops. It should be noted also that seventy years of experience has proved that Captain Barclay's view on the subject of long leases has not been adhered to in Great Britain.

Whatever truth there may have been in Captain Barclay's criticism to the effect that the Wadsworth in charge of the estate in 1841 was much wedded to old customs, the system of rent paying on the Wadsworth estate had materially changed by 1867 and more or less in conformity to the suggestion of Barclay, at least the rent had become a fixed charge instead of a share, though the payment was partly made in kind.

In writing of tenant farming in 1867, a correspondent of the *New England Farmer* residing in Orleans County, New York, said:

"Probably one of the best systems of tenant farming in this country is that adopted on the Wadsworth farms, in western New York, which are only let from one year to another. But then no tenant is turned off without cause; the rule being never to turn off a good tenant, nor keep a poor one. These farms are managed by an ex-

¹ "Agricultural Tour in the United States," pp. 36, 38, 44.

perienced agent, who each year directs which fields are to be sown to wheat, which put into spring crops, and which mowed or pastured; all being arranged in rotation, so as to keep the land in good condition, and give a reasonable chance to make money. The rent being a certain amount of wheat per acre, for the land sown to wheat; something less, in money, for spring crops; less yet for meadow, and least of all for pasture. The tenant also pays a moderate rent for buildings and orchard, and all taxes. Repairs made by tenant, new buildings and fences by landlord. Stipulations in regard to seeding down and making manure are favorable to the land, without being hard on the tenant. About one-fifth of the farm is generally sown to wheat, which gives a good income to the proprietor, and a good chance to make money to the tenant."¹

While the methods of letting land on the Wadsworth estate have not conformed very closely in detail to the English system, the general principles of estate management are essentially the same. The estate agent is found performing the same functions as in England and the idea of living after the fashion of the English country gentleman has not been lost sight of by the present generation. In 1907 one driving about Genesee might meet upon the road a carriage party driven by a liveried coachman similar to that of an English squire or a Scottish laird. Considerable space has been given to the Wadsworth estate because it is a rare instance of a landed estate of the English type in America.

Tenant farming in New York was not confined to large estates. An instance is given of a dairy farm with 25 cows in Herkimer County which had long been operated by the owner but which was being operated by a tenant in 1845.² In the sheep regions of New York and Vermont farms were sometimes let to tenants who owned a half interest in the "sheep and other stock."³

To quote from *The Cultivator* of 1844, "The practice prevails, to some extent, of letting farms to tenants, and receiving in the shape of rent a portion of the produce in kind, say a third, half,

¹ *New England Farmer*, 1867, p. 97.

² *The Cultivator*, 1845, p. 84.

³ *Ibid.*, 1846, p. 187; 1849, p. 111.

or two thirds, varying with the amount of stock, seed, etc., furnished by the proprietor."¹ This probably relates to the state of New York.

H. L. Ellsworth, an owner of large areas of land near Lafayette, Indiana, throws some light upon tenant farming in Indiana in 1845: "I was offered sixteen bushels of corn as rent, per acre, instead of one-third of the crop which is the usual share for the landlord. I have rented one thousand acres of ground for sixteen thousand bushels of shelled corn delivered in the crib."² Similar methods of renting land were in use near Coshocton, Ohio, where in 1850 there were "many large landholders," some of whom rented out their lands on shares, or for 20 bushels of corn per acre. The tenants occupied only from year to year.³

As far west as Oskaloosa, Iowa, farm land was rented to tenants as early as 1858.⁴ In Illinois, in 1859, when land could be purchased for \$2.50 an acre land was let to tenants for a share of the grain.⁵ Near Belvidere, Illinois, in 1860, a region which had been settled about 25 years, the "renting so many farms without having them stocked" is mentioned as having a bad effect upon the agriculture of the region, but is explained by the lack of capital.⁶ Near Madison, Wisconsin, a landlord was advertising for a man "to carry on a large farm either as foreman or on shares, for a term of years."⁷

These statements give no basis of passing judgment on the question as to the numerical importance of tenant farmers prior to the Civil War, but they give such evidence of the existence of tenancy as keep the student from being surprised when he comes upon the statistics of tenancy in 1880 and finds that a fourth of the farmers did not at that time own the acres they tilled.

¹ *The Cultivator*, 1844, p. 151.

² Pat. Office Report, 1845, p. 384.

³ *The Cultivator*, 1850, p. 358.

⁴ *Country Gentleman*, 1858, Vol. XI, p. 33.

⁵ Caird, "Prairie Farming in America."

⁶ *Country Gentleman*, 1860, Vol. XV, p. 234.

⁷ *The Wisconsin Farmer*, 1859, Vol. XI, p. 72.

CHAPTER XXI

FARM OWNERSHIP AND TENANCY IN THE UNITED STATES SINCE 1880

IN 1880 there were 4,008,907 farms in the United States. Three-fourths (74.44 per cent) of these farms were occupied by owners, while one-fourth (25.56 per cent) were operated by tenants. The tenant farmer was not confined to the older parts of the United States. The renting of farms was practiced in the regions of most recent settlements as well as in the older states of the East. Tenants were found on the very margin of cultivation in central Kansas. In Illinois there were more tenants than in any other state in the Union. The percentage of all farms operated by tenants was only 8.2 in Massachusetts, and 16.5 in New York and in Pennsylvania, while 31.4 per cent of the farms of Illinois were operated by tenants.

In 1910 there were 6,361,502 farms in the United States, 63 per cent of which were operated by the owners directly or through hired managers, while 37 per cent were operated by tenants. The greater part of this increase took place prior to 1900. The percentage of tenants in 1900 was 35.3. Thus the percentage of tenancy increased only 1.7 between 1900 and 1910, while the percentage rose from 28.4 in 1890 to 35.3 in 1900, an increase of 6.9. Our chief attention should be given, therefore, to the explanation of changes in tenancy prior to 1900. The tenure statistics for the four census dates for which such statistics are available are not exactly comparable. For 1900 and 1910 farms operated by owners are divided into three classes. In 1910 those owning all the land they operated represented 52.7 per cent of all farmers, those renting additional land 9.3 per cent, those operating through hired managers .9 per cent. The percentage of the improved land operated by tenants was 32.7 in 1910. The percentage in 1900 was 30.2.

Thus in terms of area, tenancy has not made quite as great inroads as the percentage of farms operated by tenants would indicate. The increase between 1900 and 1910 is greater, however, in terms of improved land than in terms of farms.

The percentage of tenancy was higher in many southern states than in Illinois, but it does not necessarily follow that a higher proportion of the farm land in the South was rented. In the South tenant farms were usually small and owned farms were generally large. This is shown in the following table:

TABLE XVIII
PERCENTAGE UNDER 50 ACRES OF ALL FARMS OPERATED BY TENANTS OR
BY OWNERS
1880

STATE	TENANTS	OWNERS
United States	49.25	22.48
Alabama	74.55	15.50
Georgia	63.57	11.64
Mississippi	74.56	13.94
So. Carolina	79.35	20.85
Illinois	30.51	19.79
Indiana	36.77	26.59
Iowa	19.73	14.38
Ohio	29.26	30.49

In the four corn states under consideration in this table, there is no such marked difference in the proportion of rented and of owned farms under fifty acres. This gives ground for the belief that the percentage of the agricultural area operated by tenants in the South was much smaller, in 1880, than the percentage of farms operated by tenants.

A share of the product was the most common form of rent throughout the Union in 1880, with the exception of a few counties in the Cotton Belt where the rent took the form of a specified amount of cotton and was counted as cash rent in the census reports. Of all farms in the United States 17.52 per cent were operated by share tenants, 8.04 per cent by cash

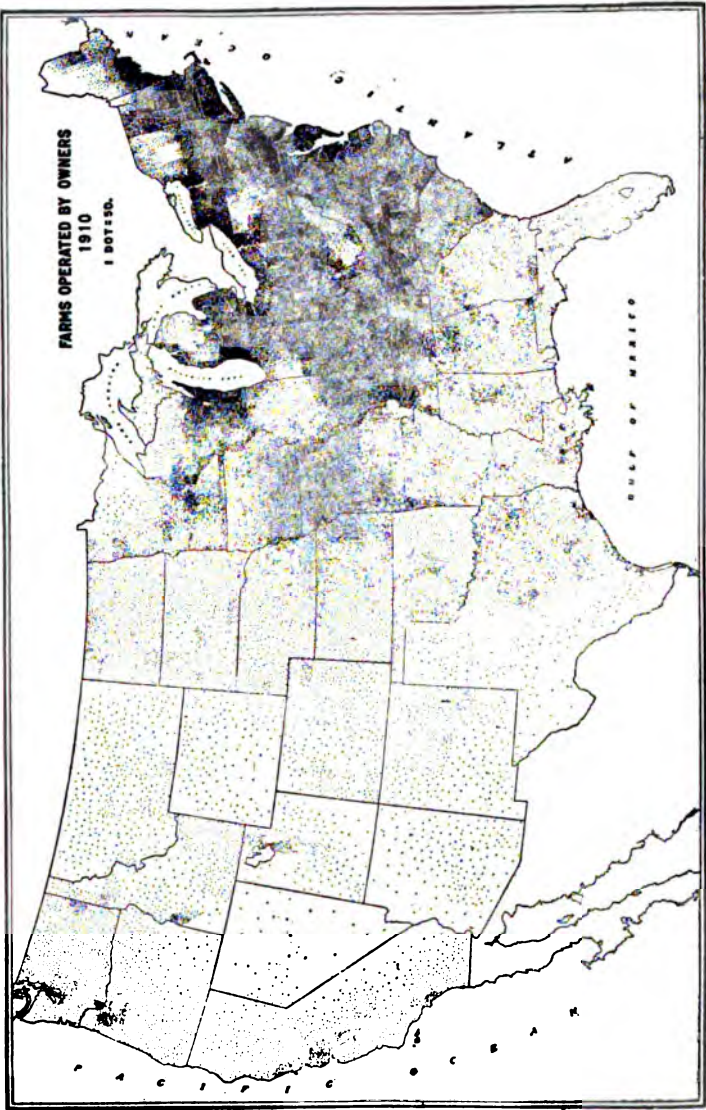


FIGURE 12

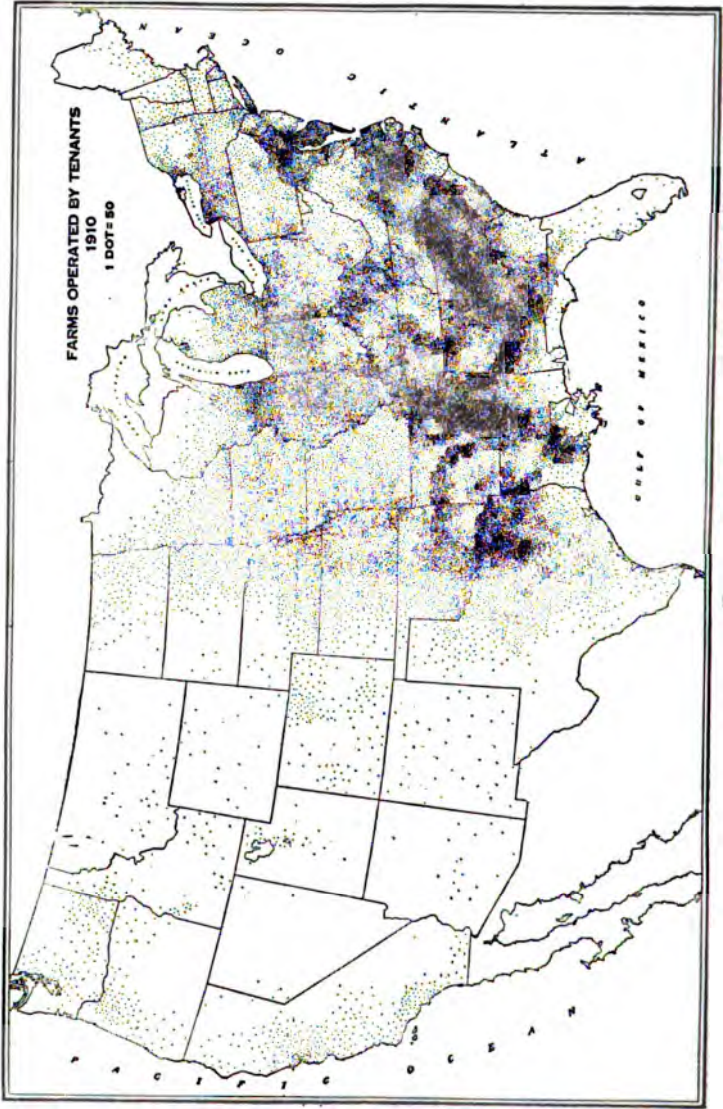


FIGURE 13

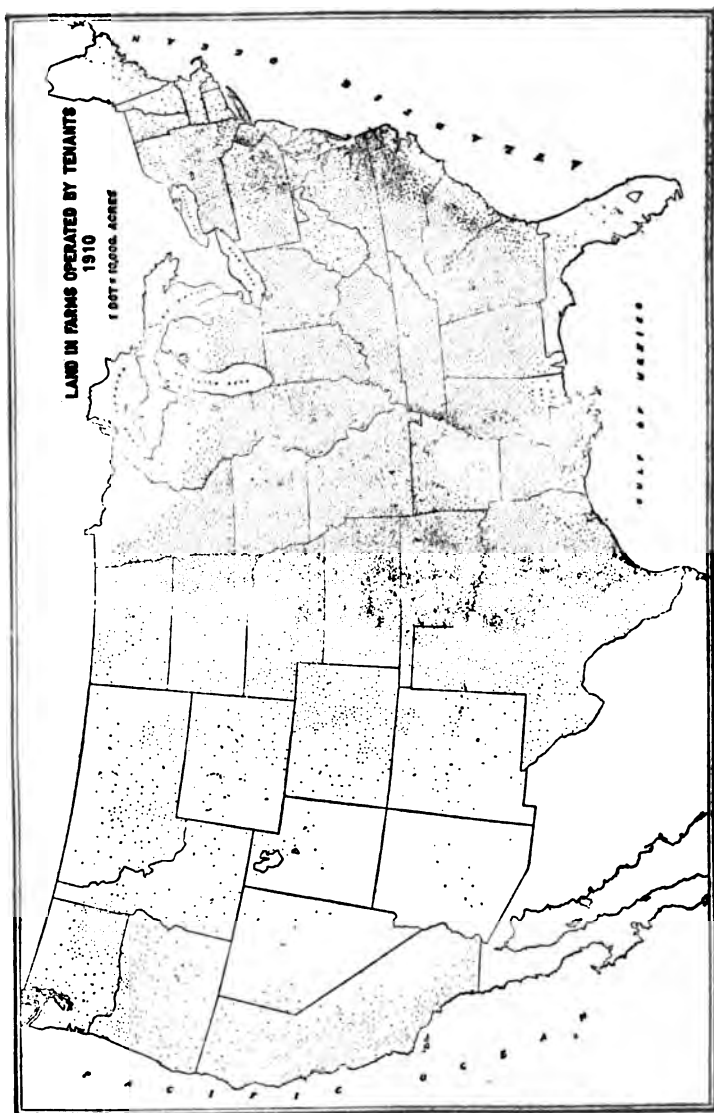


FIGURE 14

tenants, and 74.44 by owners. This predominance of share tenancy explains why references to tenancy in the literature of the earlier decades related so generally to share tenancy. Share tenancy had many forms and was common. Cash tenancy was less common and was more simple and less varied in form, hence cash tenancy was discussed less than share tenancy.

The decade following the census of 1880 brought an increase of a half million in the number of farms. The increase in tenant farmers was more than proportionate, and the percentage of share tenants rose to 18.41, that of cash tenants to 9.96, while the percentage of owners fell to 71.63. In the decade from 1880 to 1890 share tenants increased in numbers in the new grain-growing region of Minnesota, the Dakotas, Nebraska, and Kansas. There was a marked increase in the number of share tenants in the cotton regions of Texas, Mississippi, and Georgia. Cash tenants increased markedly in the cotton region of South Carolina, Alabama, and the alluvial of the Mississippi.

The next ten-year period brought an increase of more than a million in the number of farms, but in spite of the increase in farms, the percentage of tenancy increased more rapidly than in the preceding decade. In 1900 share tenants constituted 22.2 per cent, cash tenants 13.1 per cent, leaving 64.7 per cent representing farms operated by owners or part owners directly or through hired managers. It will be noted that cash tenants increased at a more rapid rate than share tenants. This was especially true in those cotton states where negroes predominated. In Texas where cotton is grown largely by white farmers there was an increase from 33.1 to 42.4 in the percentage of share tenants and a decline from 8.8 to 7.3 in the percentage of cash tenants. In South Carolina the percentage of cash tenancy increased from 27.75 in 1890 to 36.7 in 1900, while the percentage of share tenancy decreased from 27.5 to 24.3. But the more rapid increase in cash tenancy was not confined entirely to the South. In Iowa the percentage of cash tenants increased from 12.35 in 1890 to 19.5 in 1900, the percentage of share tenancy declined from 15.7 to 15.4 in the same period.

In the South regions of cash tenancy are more generally regions of negro tenants. In the Black Prairie of Texas, where share tenants are very numerous, negro tenants are scarce and white tenants are present in great numbers. In the Yazoo-Mississippi delta, where with the exception of two counties cash tenancy prevails, negroes constitute almost the whole tenantry. The same is true of the Black Prairie of Alabama and eastern Mississippi. In Georgia and South Carolina negro tenants and cash tenancy are associated together while farther to the north and northwest, in these two states, where share tenancy prevails, the negro tenant is not common, while white tenants are found in abundance.

It should be borne in mind that the cash rent of the Cotton Belt is not necessarily a fixed amount of money. It is very commonly a fixed amount of cotton. Furthermore it should not be inferred that cash rent necessarily represents a higher form of tenancy than share rent. These subjects will be discussed in detail in later chapters on the methods of renting land. The purpose here is to show the trend of affairs with regard to the increase in tenancy.

By comparing the figures one will be impressed with the enormous increase in the number of tenants between 1880 and 1900. During this twenty-year period the total number of farms increased 43 per cent, while the number of farms operated by cash and share tenants increased 98 per cent. These questions properly arise: Why should the percentage of tenancy increase so rapidly during a period when so many new farms were becoming available? Is it not true that these new farms have been secured by taking up new lands at a low price which is conducive to an increase in the ownership of land on the part of tenants? In answering these questions many facts need be taken into account. It is true, when the United States is considered as a whole, that the area in farms has increased more rapidly than has the number of farms, so the average size of farms was greater in 1900 than in 1880. The average size in 1880 was 133.7 acres, while in 1900 it was 146.6 acres. But when the specific states are considered in which tenancy has been in-

creasing so rapidly, the matter appears somewhat different. This is shown in the following table:

TABLE XIX
AVERAGE SIZE OF FARMS AND THE NUMBER OF FARMS OF 500 ACRES AND OVER IN SPECIFIED STATES IN 1880 AND IN 1900

STATE	1880		1900	
	AVERAGE SIZE	NUMBER OF FARMS OF 500 ACRES AND OVER	AVERAGE SIZE	NUMBER OF FARMS OF 500 ACRES AND OVER
Alabama	139.	6,513	92.7	3,744
Georgia	188.	10,508	117.5	6,576
Mississippi	156.	5,769	82.6	3,320
South Carolina	143.	5,328	90.0	3,324

These figures suggest that the increase in tenancy may have resulted from the breaking up of large farms into small holdings let to tenants. All of the states in the above table showed a marked decrease in the number of farms containing 500 acres and over, and a great increase in small farms.

The decline in the number of large farms was not confined to the Southern States. The number of farms of 500 acres and over in Illinois decreased from 3898 to 2333, though there was no important change in the average size of farms in that state owing to counterbalancing changes in other size groups. In Texas a breaking down of large farms into small ones was going on in the Black Prairie, but this was more than counterbalanced in the state as a whole by the development of large ranches in the cattle country to the west and south. Hence, this cotton and cattle state illustrates the way in which averages covering diversified territory cover up the facts regarding the tendencies in given regions.

That cotton production was gradually becoming organized on a tenant basis instead of a wages system is further borne out by statistics which show a decline in the expenditure for labor in 1870¹ and in 1900 in this region. There was a decline in the

¹ No statistics available for 1880, hence 1870 figures are used.

wages system in the same regions where large farms were decreasing and where small farms and tenant farmers were rapidly increasing. These facts seem to bear out the theory that in the Cotton Belt tenancy had increased at the expense of the wage laborers and hence marked a rise in the status of the tillers of the soil. The extent to which this change in name corresponded to a real change in economic status will be considered later.

Lest there should be a tendency to credit the high percentage of tenancy in the South entirely to the presence of the negro, who so recently started life as a freedman with nothing but his hands, let it be noted that in the Black Prairie of Texas and in the northern parts of the cotton regions of the older cotton states, where the farmers are generally whites, the increase in tenancy has gone on with very great rapidity if not quite as rapidly as in the regions of negro tenants. By comparing the location of slaves in 1860 with the location of negro tenants in 1910 it becomes obvious that in the southern states few negro tenants were found in 1910 beyond the regions where they were abundant as slaves in 1860. In the new cotton region of Texas the whites have gone in to occupy the land. The remarkable thing is that they are so generally tenants.

One hypothesis which may be ventured as an explanation of this common fate of the whites of the new cotton region and the negroes of the old cotton regions, is that while in the old slave regions the wages system gradually gave way to a form of tenant holdings which the census recognized as separate farms, there was a breaking down of great cattle ranches in Texas into small farms and that white immigrants, largely from the older cotton states, went in as tenants of the large proprietors. The two cases had this in common that the land had previously been acquired in large estates. The breaking down of large farms does not imply the breaking down of estates. The change may have been in the landlord's method of operating his land.

The change from large farms operated by hired laborers to estates of small farms operated by tenants is not a complete explanation of the increase in tenancy.

It is a matter of common observation that in the northern states, young men start in as laborers, become tenant farmers, and later buy farms and join the ranks of landowning farmers. The above facts show that in the southern states the movement from the wage earners to tenant farmers was abnormally rapid between 1880 and 1900, due to a reorganization of the methods of handling landed estates. To some extent this same movement was in evidence in central Illinois and in other northern states, but there are facts which tend to show that the increase in tenancy was due in part to a slowing down of the movement from tenancy to ownership. This is shown in the following table:

TABLE XX
PERCENTAGE OF PERSONS OWNING AND RENTING FARM HOMES

	1890		1900	
	OWNED	RENTED	OWNED	RENTED
Under 25 years	32.6	67.4	27.8	72.2
25 to 34 years	49.8	50.2	45.3	54.7
35 to 44 years	64.0	36.0	64.4	35.6
45 to 54 years	72.3	27.7	70.7	29.3
55 years and over	82.2	17.8	81.4	18.6

This table indicates that nearly three-fourths of the farmers under twenty-five years of age are tenants; that the percentage of tenant farmers declines, and the percentage of landowning farmers increases, as we pass from the younger to the older age periods, until less than a fifth of the farmers who are fifty-five years of age and over are tenants.

Statistics of this kind were first collected in 1890, and while they showed the status at that time and suggested a movement from tenancy to landownership, they did not prove the existence of such a movement. By comparing the figures for 1890 with those for 1900, this movement is clearly shown. The occupiers of farm homes who were from 25 to 34 years of age in 1890, were from 35 to 44 in 1900. By comparing these occupiers at the two dates, we find an increase in the percentage of home owners,

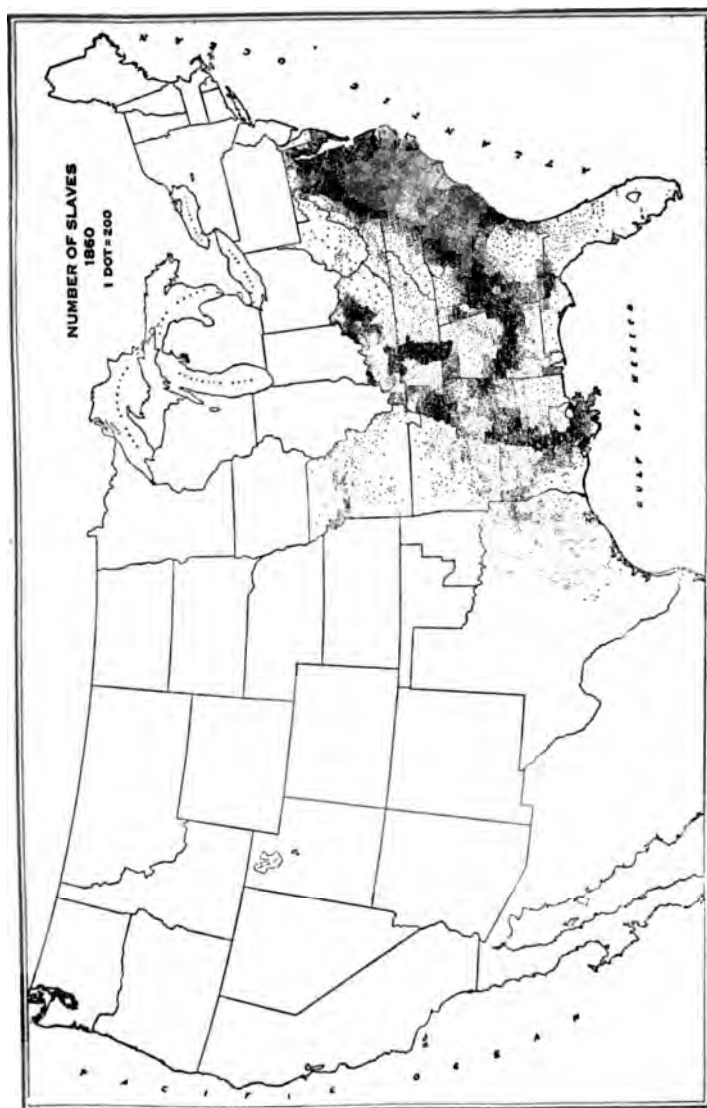


FIGURE 16

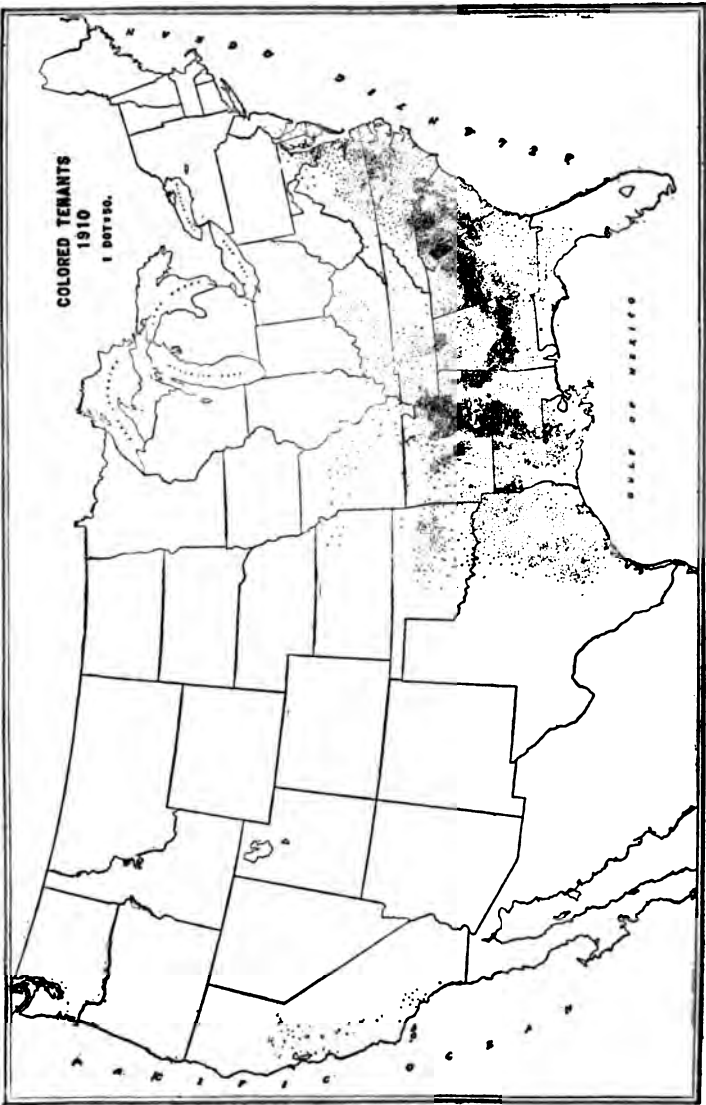


FIGURE 17

from 49.8, in 1890, to 64.4 in 1900. Of the farm-home occupiers belonging to the age period from 35 to 44 in 1890, and to the age period 45 to 54 in 1900, 64 per cent were owners at the earlier date, and 70.7 per cent at the latter.

TABLE XXI

PERCENTAGE OF FARM HOMES CLASSIFIED BY TENURE AND AGE OF FARMER,
1900

STATE	AGE	PER CENT OWNED	PER CENT RENTED	PER CENT UNKNOWN
United States	Under 25 years . .	27.35	71.07	1.58
	25-34 years . . .	44.85	54.17	.98
	35-44 years . . .	64.02	35.35	.63
	45-54 years . . .	70.34	29.15	.51
	55-64 years . . .	78.64	20.85	.51
	65 years and over .	84.29	15.00	.71
Alabama	Under 25 years . .	18.56	80.24	1.20
	25-34 years . . .	32.53	66.61	.86
	35-44 years . . .	47.67	51.69	.64
	45-54 years . . .	45.92	53.49	.59
	55-64 years . . .	51.78	47.55	.67
	65 years and over .	56.18	42.98	.84
Georgia	Under 25 years . .	15.23	83.03	1.74
	25-34 years . . .	27.67	71.21	1.12
	35-44 years . . .	42.00	57.14	.86
	45-54 years . . .	46.64	52.61	.75
	55-64 years . . .	50.94	48.31	.75
	65 years and over .	57.91	41.05	1.04
Mississippi	Under 25 years . .	15.21	83.53	1.26
	25-34 years . . .	27.31	71.90	.79
	35-44 years . . .	38.37	60.89	.74
	45-54 years . . .	45.67	53.72	.61
	55-64 years . . .	46.53	52.86	.61
	65 years and over .	49.72	49.56	.72
Texas	Under 25 years . .	20.05	79.08	.87
	25-34 years . . .	34.48	64.90	.62
	35-44 years . . .	52.98	46.63	.39
	45-54 years . . .	60.04	39.61	.35
	55-64 years . . .	68.31	31.33	.36
	65 years and over .	74.06	25.34	.60
Illinois	Under 25 years . .	23.69	74.67	1.64
	25-34 years . . .	35.63	63.26	1.11
	35-44 years . . .	56.83	42.51	.66
	45-54 years . . .	69.58	29.84	.58
	55-64 years . . .	81.15	18.28	.57
	65 years and over .	88.53	10.62	.85

FARM OWNERSHIP AND TENANCY IN UNITED STATES 265

TABLE XXI (Continued)

STATE	AGE	PER CENT OWNED	PER CENT RENTED	PER CENT UNKNOWN
Indiana	Under 25 years . .	29.28	68.76	1.96
	25-34 years . . .	47.63	51.51	.86
	35-44 years . . .	67.56	31.89	.55
	45-54 years . . .	77.95	21.57	.48
	55-64 years . . .	87.10	12.45	.45
	65 years and over .	91.71	7.58	.71
Iowa	Under 25 years . .	23.66	74.88	1.46
	25-34 years . . .	29.08	69.92	1.00
	35-44 years . . .	70.65	28.88	.47
	45-54 years . . .	76.24	23.35	.41
	55-64 years . . .	85.20	14.18	.62
	65 years and over .	90.50	8.61	.89
North Dakota	Under 25 years . .	82.97	15.37	1.66
	25-34 years . . .	86.44	12.52	1.04
	35-44 years . . .	90.40	8.88	.72
	45-54 years . . .	92.17	7.32	.51
	55-64 years . . .	93.56	5.74	.70
	65 years and over .	93.86	5.11	1.03
Massachusetts	Under 25 years . .	57.54	39.67	2.79
	25-34 years . . .	70.30	27.91	1.79
	35-44 years . . .	80.74	18.74	.83
	45-54 years . . .	87.43	12.02	.55
	55-64 years . . .	92.61	7.04	.35
	65 years and over .	95.04	4.28	.68
Nebraska	Under 25 years . .	26.53	71.80	1.67
	25-34 years . . .	42.34	56.69	.97
	35-44 years . . .	64.07	35.31	.62
	45-54 years . . .	75.56	23.90	.54
	55-64 years . . .	82.80	16.65	.55
	65 years and over .	85.24	13.64	1.12
New York	Under 25 years . .	36.40	61.77	1.83
	25-34 years . . .	50.53	48.40	1.07
	35-44 years . . .	67.10	32.22	.68
	45-54 years . . .	77.89	21.71	.40
	55-64 years . . .	85.96	13.60	.44
	65 years and over .	91.69	7.75	.56
Wisconsin	Under 25 years . .	57.76	40.93	1.31
	25-34 years . . .	72.47	26.73	.80
	35-44 years . . .	85.70	13.92	.38
	45-54 years . . .	91.05	8.61	.34
	55-64 years . . .	94.42	5.16	.42
	65 years and over .	95.23	4.09	.68

These figures indicate a constant movement from tenancy to landownership. But, from generation to generation, a smaller percentage of the farmers are able to make this transition. It should be noted in the above table that of the occupiers of farm homes who were under 25 years of age, a smaller percentage were owners in 1900 than in 1890. This is true for every age period given in the table except one; the reverse being true for the period from 35 to 44. This suggests that the decline in the percentage of landownership is due, in part, to the inability, or disinclination, of the succeeding generation to acquire landownership so generally as their predecessors.

The movement from tenancy to ownership has been more complete in some parts of the United States than in others. This is shown in the previous table, which shows the farm homes of selected states classified by tenure and by age of the farmer.

These figures show that in those southern states where negro farmers are dominant the movement from tenancy to ownership is far less pronounced than in Texas where the whites predominate over the blacks. In the Northern States farmers appear to be highly successful in becoming the owners of farms. Even in Illinois, where 39.3 per cent of the farmers were tenants, all but about one-tenth of the farmers 65 years of age and over had succeeded in becoming owners. The residuum of tenants left at this age was 8.6 per cent in Iowa, 7.6 per cent in Indiana, and only 4.1 per cent in Wisconsin. To contrast the old with the new, Massachusetts showed 4.3 per cent and Nebraska 13.6 per cent of tenancy among farm-home owners 65 years of age and over. That this contrast is not general is shown by the fact that in North Dakota the percentages of tenancy among these older farmers was only 5.1.

A proper conception of the economic status of the American farmer at the close of the nineteenth century must give proper emphasis to the fact of landownership on the part of farmers. In the North landowning farmers generally predominated. In the Cotton Belt tenants outnumber the landowning farmers. Figure 12 shows the distribution of landowning farmers in

1910. The small number of owners in that region is indicative of the fact that in the South there is a distinct tenant class.

In the Cotton Belt the land is still in the possession of a landlord class. In parts of Virginia where the land has not been so generally retained in large estates, the percentage of landowning farmers among the negroes is very high. This can be explained in part by the lack in eastern Virginia of a great staple crop like cotton which would make profitable the operation of plantations by tenants, and partly by the fact that the negroes of Virginia are a higher type than those of the Cotton Belt.

The apparent superior economic position of the northern farmer is somewhat reduced when the question of mortgage indebtedness is raised. In 1900, 30 per cent of the farm homes occupied by owners were mortgaged. The census for 1900 shows a more complete analysis of the farming classes by tenures than do the census reports for 1880 and 1890. Those other than cash and share tenants renting all the land they cultivated were divided into four classes, namely, owners, 54.9 per cent, part owners, 7.9 per cent, owners and tenants, .9 per cent, and managers, 1 per cent. The practice of farming a tract of rented land in addition to the land owned seems to have been a common practice in many of the grain-growing sections.

Farms operated by managers were not so numerous but were more generally large farms, so that while they are only 1 per cent of the farms they represent 10.7 per cent of the aggregate area in farms. In spite of the fact that these farms include many of the country homes of wealthy city folk, the cheap areas of the West included in these managed farms reduce their value to only 5.5 per cent of the aggregate value of farms.

The position of the tenant farmers is better understood when one knows more of the character of the landlords whose land they cultivate. It has been shown that in the North most tenant farmers sooner or later become landowning farmers, while in the South a very large proportion of the tenants never rise to the position of landowners. The vast majority of the rented farms in the North are owned by men who have passed through various stages of acquiring land for their own use, and who are

found in the landlord class only in the later years of their lives. In the southern states, in the region of negro cotton tenants, there is a landlord class whose life work is the management of landed estates operated by tenants.

Great landed estates, such as the Scully and the Sibley estates in Illinois, and the Wadsworth estate in New York, are found here and there in the North, but they are exceptions. As a rule the landlords are retired farmers. Even in the South, outside of the areas densely populated with negroes engaged in cotton production, which is equivalent to saying outside of the regions where large cotton plantations were operated by slaves in 1860, the landlords with but one or two tenants are most common.

The statistics relating to the ownership of rented farms in 1900 were published for no territorial unit smaller than the state, hence the statistics do not show the contrast within the southern state with respect to the size of estates in the counties where negro tenants predominate in numbers and in the counties where white tenants are in the majority, but the influence of the old cotton plantation system and its reorganization upon the statistical averages for the South is shown by the fact that while only 2 per cent of the rented farms owned by residents of the North Central States were in estates comprising ten farms or more, the percentage of farms of the same class in the South Central States was 20.9.

Landlords in the United States, whether they belong to the numerous class of retired farmers or to the small class of owners of great estates, are, as a rule, residents of the district in which their lands are located. "Of the 1,934,346 farms in the United States for which the names and post-office addresses of the owners were reported, the owners of 1,523,863, or 78.8 per cent, resided in the same county in which their farms were located; 307,656, or 15.9 per cent, in the same state but not in the same county; 102,827, or 5.3 per cent, outside of the state (of which 1097, or .051 per cent, were in foreign countries). Many residing in the same state, but not in the same county, had homes very near their rented farms. This was notably the

case with farms located near county lines. Such owners can hardly be classed as non-residents, and the very small per cent of rented farms owned by non-resident landlords would have been still further reduced if it had been practicable to exclude such owners.

"The Western division had the smallest proportion of rented farms whose owners resided in the county where their rented farms were located. . . . The South Central and South Atlantic divisions had the largest proportion of owners residing in the county where their rented farms were located. . . . The North Central division had the largest, and the Western the next largest, proportion of rented farms with owners residing outside of the state."¹

The character of the landlord has great significance when viewed from the standpoint of the tenant farmer who hopes to rise to the position of a landowning farmer. Land leased by the retired farmer is not held out of the market for many years, because of the limits set to life. Upon the death of the retired farmer, if not at an earlier date, the land is divided among heirs or sold to settle the estate. This brings land upon the market and helps those who inherit the proceeds to buy farms. Permanent landed estates managed by a landlord class keep land off the market so far as tracts of a size which a small farmer can buy are concerned, and the influence of inheritance is to maintain the landlord class. The permanent landlord class trained to manage estates operated by tenants is, however, not without its redeeming feature, as any one will conclude who studies the present methods of operating landed estates in the regions of negro tenants in the South to-day. Trained landlords with large estates are, as a rule, more agreeable for a tenant, white or black, to deal with than are the retired farmers who enter the landlord class for a few years late in life.

¹ Twelfth Census of the United States, 1900, Vol. V, p. lxxxvii.

CHAPTER XXII

FORMS OF LAND TENURE IN THE UNITED STATES

IS A CERTAIN AMOUNT OF TENANCY A GOOD THING ?

IN the discussion of the size of farms it was noted that for a given farmer engaged in a given type of farming at a given stage in his own development, and with given conditions with respect to wages, interest, land values, and prices for his products, there is a size of farm which will pay him best. The question now to be taken up relates to the various ways in which he can get the use of the amount of land he finds it most profitable for him to operate.

Few young farmers are financially able to own the amount of land they can operate to best advantage. If each man operated the land he is capable of owning, many young farmers would be operating farms too small for their energies, and many old farmers would have in hand far more land than they could utilize advantageously, to the loss of the young farmer, the old farmer, and the people of the nation who consume farm products.

Farm tenancy is an institution which provides for getting the land into the hands of those who are in a position to cultivate it, but who are unable to buy farms. In its best forms, tenancy in a limited amount may be a good thing. In 1910 there were 2,354,676 or 37 per cent of the farmers of the United States reported as tenants who owned none of the land they farmed, and 593,825 or 9.3 per cent who leased part of the land they cultivated. Thus, it would seem that nearly half of the farmers are using tenancy as a means of securing the use of the land they feel capable of operating, but which they are not yet able to own. It is, therefore, a matter of great importance that the methods of leasing land be such as will be conducive to good

farming and to the well-being of the tenant farmers and to the nation as a whole.

A large proportion of the tenant farmers are young men who are in the process of earning enough money to buy a farm. This is especially the case in the Northern States. In Illinois, for example, nearly 44 per cent (43.77) of farm homes which were rented were occupied by persons under thirty-five years of age, whereas less than 15 per cent of those owning their farm homes were under thirty-five years of age.

The owners of rented land are quite generally older farmers who have retired or who have more land than they wish to farm; 80 per cent of the owners of rented land have but one farm let to tenants, 11.4 per cent have but two, 5.4 per cent have three or four, 2.3 per cent have five to nine, .7 per cent have ten to nineteen, .2 per cent have twenty or more farms. Taking the United States as a whole the large estate made up of rented farms is the exception and the landowner with one or two farms to rent is the rule. In a vast number of cases the tenant is the son or son-in-law of the landlord. At the time when the parents are ready to retire from the active duties the farm is usually turned over to one member of the family on a tenant basis, with the expectation that in time title to the farm will be secured by the tenant and he will become the owner of the farm.

While tenancy is common at the present time and has been present in the United States since the beginning of our nation, it has ever been looked upon merely as a stepping stone, a temporary means of acquiring the use of land, and not as a permanent condition for any individual. The statistics show an increase in the percentage of tenancy, however, and it appears that, on the average, farmers grow older as tenants than they did when land values were lower. One important subject of consideration relates to the means of maintaining the movement from tenancy to ownership. This will receive especial consideration in a later chapter. In this chapter especial attention will be given to the methods of renting land with a view to the right use of the land and to the equitable distribution of the products of the land.

Points to be considered in renting land. The first point to be considered by the landlord is the character of the tenant to whose care he is to commit his farm. Honesty is the first essential, without which the farm may be damaged within a year to an amount greater than the annual rent.

Young men who desire to succeed as tenant farmers cannot have the importance of honesty too strongly impressed upon them. The efficient young man who is honest finds no difficulty in gaining control of land and capital, but no one with capital will have anything to do with a dishonest tenant if he knows him and can get any one else. Many men do things which they count very shrewd, but which at once puts them in the class of men who have to be watched, and it is a general principle that the greater the risk the higher the rate of profit which the capitalist should demand. The honesty of the tenant insures the landlord against the losses he is in danger of sustaining if the tenant is dishonest. The landlord can afford, and is usually willing, to pay a liberal premium for this insurance.

Efficiency is equally important. If the farm is let on shares, the income of the landlord is dependent upon the efficiency of the tenant. If let for cash, it is much better to have a capable tenant who can pay the rent with ease, since the reputation of the farm depends upon the success of the tenant. Every tenant has a record,—look into this record before making a contract.

The tenant should be in possession of a requisite amount of capital to operate the farm effectively. This amount will depend upon the type of farming and the form of tenure. It is a common practice for the landlord to supply a large proportion of the operating capital where he is assured of the honesty and efficiency of the tenant. It does not make so much difference who provides the capital, the important thing is that the capital certainly be provided.

THE FARM AND THE LANDLORD

In choosing a farm, consider its suitability to the type of farming most congenial to the tenant, location with respect to markets, schools, etc., the qualities of the soil, the arrangement

of the fields and buildings for economy of labor, the size of the farm, whether it will give full scope to the energy of the tenant, the water supply, and the sanitary conditions of the home. Ascertain if there has been any sickness in the family or disease among the animals of the former tenant. The fairness of the rent asked should be looked into by the tenant. By making inquiry of the outgoing tenant, the neighbors, the thrasher man, and the operator of the local creamery or cheese factory, the prospective tenant can get information on many of these points and at the same time ascertain the amount of the income, the expenditures, and other factors which will show the possibilities of the farm.

The farm being found satisfactory, make sure that the landlord is a fair-minded man, capable of giving good advice but not overfree with his suggestions nor overinsistent upon his own notions being followed in detail. A nagging landlord makes the day long and the work tiresome.

The landlord should try to see the situation from the viewpoint of the tenant as well as his own and then strive to be fair. This will pay not only in the satisfaction that results from being decent with one's fellow-men, but also in greater returns from the farm. The landlord who takes advantage of a tenant who is striving to do the right thing, and "grinds him down," may gain a few cents in the beginning, but he will lose dollars in the end. He will gain the reputation of being a grasping landlord. Good tenants will avoid him, for it is true not only that the efficient farmers tend to get the most productive land, but also that the honest tenant tends to get the honest landlord.

What the lease should contain. The lease should contain a description of the land (the description found in the deed to the land), the buildings, and such other property belonging to the landlord as may be involved in the agreement.

Uses of property. The uses and the limitations upon the uses to which the property may be put by the tenant should be stated specifically in the contract. For example, the land to be retained in permanent pasture should be described, the

area to be kept in meadow stated, the crops which are not to be grown named, the uses named for which trees may be cut, etc.

Disposition of products. It is through the regulation of what crops are to be produced upon the farm, and the forms in which the products of the farm are to be disposed of, that the farming may be directed along lines least exhausting to the soil. In general, tenant farmers are too much inclined to sell grain and hay rather than live stock and dairy products. This is partly due to the lack of capital on the part of tenant. Restrictive clauses in leases which require that all hay, straw, corn fodder, corn, etc., be fed upon the farm should be accompanied with provisions enabling the tenant to secure the necessary animals to consume these products.

Use of manure made on the farm. The manure made upon the farm, from feeds produced thereon, belongs to the land, and in no case should any tenant be allowed to remove this manure from the land. Danger from this source arises most commonly in the case of farmers who own a farm and hire additional land. Land leased in this way should receive its pro rata share of the manure.

Contracts usually provide that the tenant shall spread all manure upon the land at such points as the owner shall direct. This clause is more or less useless, as a new tenant will gladly haul all the manure he can find, while a tenant who expects to leave before another cropping season cannot easily be forced to haul manure for his successor. The obvious remedy is to pay the tenant for hauling the manure from which he is to derive no benefit or else not expect him to perform this service.

Purchase of feed and fertilizers. In order that the tenant be not discouraged in buying feeds and fertilizers to be utilized upon the farm the contract should provide for compensation to the tenant upon the termination of his lease for the unexhausted supplies of fertility placed in the soil from these sources. The payment for such improvements should never be for more than the benefit to be derived by the incoming tenant. Unwise expenditures should be the loss of him who makes them.

Destruction of noxious weeds. Great care should be taken to provide in the contract for the cutting of all noxious weeds before they mature their seeds. A clause should be inserted providing that in case the tenant neglects to destroy seed-bearing weeds in proper season the landlord may enter with the necessary help, destroy the weeds, and charge the cost to the tenant.

In the case of Canada thistles and quack grass, provision should be made against the spreading of their roots over the fields. These plants may have got a start along a fence row or along a ditch where the land has not been cultivated for years. By plowing one furrow closer than has been the practice in a place of this kind a great quantity of the roots may be loosened and dragged out over the field. Danger of spreading these plants should be guarded against strenuously. The saving of the land from the encroachment of noxious weeds is even more important, if there be any difference, than the avoidance of soil exhaustion.

Where a state law requires the destruction of noxious weeds it should be strenuously enforced. It is the duty of every landlord and of every tenant to see that such laws are obeyed.

The landlord whose farm is foul with weeds should not expect the tenant who was not to blame for this condition of affairs to clear the farm from these pests without compensation. Where this work is not performed as a part of the regular culture of the crops, the tenant should receive compensation in cash in proportion to the service rendered. The landlord who does not spend money in fighting the encroaching army of noxious weeds will soon accept a much lower rent. Where the destruction of weeds is a regular farm operation necessary to the production of a crop the tenant should not expect other compensation than that coming from increased production. The landlord whose farm is clear of weeds can easily secure enough more rent to make his activities and expenditures in the destruction of weeds very profitable.

Value of a tidy farm. The landlord should take great care to provide neat farm buildings and fences. The tenant should agree to maintain a tidy appearance about the house, the barns,

the feed lots, the fence rows, and every other part of the farm. There is a considerable advertising value in good appearances which should not be disregarded. Where it is not profitable in dollars and cents it pays abundantly in the satisfaction that comes from the greater degree of contentment and self-respect enjoyed by the farmer and his family.

New buildings and fences. In the construction of new fences and buildings there seems to be no settled practice. In some cases the landlord provides the material, performs all of the work, and pays for the board of the workmen, the tenant hauling the material from the nearest station and boarding the workmen at a fixed rate. In other cases the tenant performs all of the unskilled labor and boards the skilled laborers without charge while making the improvement.

Repairs on fences and buildings. The common practice in all forms of leases in the Northern States is for the landlord to furnish the material and the tenant to do all the work required in making ordinary repairs on fences and buildings. In some cases a distinction is made between the "inside" fences and the outside or "line fences," the landlord making the repairs on the latter and the tenant doing the work required in making repairs on the former.

Another plan which has been found more satisfactory in some instances is for the owner of the land to pay the tenant a fixed sum per day for time expended under the owner's supervision in the construction and repair of fences and buildings and adjusting the rent accordingly. This may result in a more cheerful service of the tenant in working on fences and buildings.

Some experienced landlords require the tenants to make good at their own expense damages done to gates, barn doors, pumps, etc., where the wear and tear is likely to be very great with a careless tenant and very little with a careful one. The practice on some estates is for the landlord to furnish the parts of the pump and the windmill which are subject to little wear, and to require the tenant to furnish the wearing parts. This was suggested by the difficulty met with in getting tenants to oil the windmill. If the tenant owns the gearing and wheel of the

windmill he is less likely to let the wheel run loose in a high wind or let it run for weeks at a time without oil.

Fence posts. Where post timber is found in the farm woodlot it is common practice for the tenant to make the posts needed for repairs. The main difficulty arises from the fact that tenants do not often make the posts early enough to give them time to season before they are put into the ground. The remedy suggested by one landlord is to keep a supply of posts on hand on the farm all the time and require the tenant to make, under the direction of the landlord, as many posts each year as he has found occasion to use. This problem is easily solved where the landlord looks after all repairs and pays the tenant for his labor in making repairs.

Firewood. It is the common practice where there is a woodlot on the farm, to allow the tenant to secure firewood free of charge. It is often prescribed that only dead and down timber may be taken for this purpose. In any case growing trees should not be cut until all dead timber has been taken. It is usually prescribed that all tops or slashings not taken for firewood shall be piled and burned by the tenant.

The road tax. The general rule is for the tenant to work or pay the road tax. It is often stated that in return for this service the tenant shall be allowed to secure firewood from the farm, although in some cases where this latter privilege is not granted the tenant is required to work the road tax without any special compensation beyond the use he gets of the road.

Duration of leases. There is perhaps more land let for one year at a time or from year to year, than on any other terms in the Corn Belt, and yet three-year leases and five-year leases are very common, and leases for two years and for four years have occasionally been noted. It is not uncommon to lease a farm for a period of three or five years, and then allow the tenant to remain on the farm from year to year after this period has elapsed, in case this is agreeable to both parties. Another method is to let the farm for one year with the agreement that if the parties are both satisfied with the arrangement the first year, the contract becomes good for two or four more years.

It is generally agreed among landlords that a tenant will do better if he can plan to remain for three or five years, than if he is uncertain how long he may remain. One year is required for the tenant to become acquainted with the farm.

On a dairy farm, where stock is let with the land, it is much better that the same man should have charge of the cows for a long period than for the tenants to be changing from year to year. In case the cows are owned in partnership it is very unsatisfactory to be dividing the herd every year. The following quotation from a letter from a Wisconsin farmer, who lets land on shares and furnishes a part of the stock, will help to put this matter in a clear light :

"If I knew the man to be a good one, and one that would suit, I would prefer to let for a term of years, say from three to five years, as a man only gets started the first year, for he has the farm to learn, and it is not best to be changing stock every year. I think if a tenant knows this to be his home, he will take more interest in keeping up the place. But if you are not sure the man will suit, or be satisfied to stay, I should rent for one year, as it is very easy to continue the old contract or make a new one, as the case requires."

If there is any difference, there seems to be more reason for letting land for a number of years when let for cash than when on shares. It is thought that the tenant will take much better care of the land when he has it for a number of years.

The system of crop rotation should be taken into account in determining the period of the lease, so that the tenant may have time to complete the rotation. It is a well-recognized fact that where the land is so operated as to prove most profitable in the long run, the tenant is required to make investments in the form of labor in improving the tilth of the soil, in hauling manure, and sowing grass seeds, on which he can realize the full return only after a number of years. For this reason it is thought best to let land for several years at a time.

In Scotland this long ago led to the introduction of 19- and 21-year leases, yet these very long-term leases have their objectionable features even in Scotland, where the land is held in large estates by rich men who have no thought of anything

else than letting their land to tenants. In the United States landowners are so generally retired farmers, whose farms are likely to be sold in the course of a few years to men who will farm their own land, that very long-term leases are out of the question. Compensation for unexhausted improvements is the remedy for many of the evils of short-term leases.

Amount of rent to be paid. The rent of a farm is the price paid for its annual use either in the form of money or products. The amount which should be paid depends upon the usefulness of the land and the scarcity of farm land of the grade in question. It is not always an easy matter to ascertain exactly what the "square deal" is. The amount of rent which should be given for the use of the land varies with the fertility of the land, the local market prices of products, the distance and character of the roads to the markets, the length of the term, the restrictions under which the land is to be farmed, and the probability that the tenant will improve a farm or bring about its deterioration.

In figuring on the amount which he can afford to pay, the tenant should compare the opportunities offered and the rents asked for as many farms as possible in order to select the farm which will enable him, after paying the rent and other expenses, to have left the largest possible returns for his own labor and capital.

No tenant should sign a contract until he sees clearly sources of income over and above the amount of the rent, sufficient to pay all annual expenses for labor and equipment, support his family in accordance with the standards of the community, and leave a surplus. This surplus is the ground for hope of becoming the owner of a farm. Every honest and efficient farmer will be able to make a surplus from which to save if he is on the right farm on the right terms. But this statement does not give ground for the belief on the part of every tenant who makes no surplus that his rent is too high. Before coming to such a conclusion let the tenant make sure that he is an efficient farmer. Let him compare his farming in every detail with that of other men who are making a surplus, and this, if carefully done, will point to the true cause of the lack of profit,

whether it be the terms of the contract or the methods of farming.

The landlord should not be overzealous in driving a hard bargain. The landlord who drives the hardest bargain often finds himself beaten in the end. A farm, like a horse or a cow, is more or less attractive and more or less useful according as it is well or ill treated. Under proper management land may be made to increase in productivity. It is equally true that ill treatment may greatly reduce the fertility of the land. Ill treatment is the more to be feared for the reason that in this way a tenant may sometimes increase his profits for the one year. Hence the following quotations, from men who have had long experiences in letting farms, are in point: "If you try to get more than a fair rent, the tenant will take more than the difference out of the property;" and again, "Do not beat a tenant before he comes, or he will beat you afterwards; give him a good 'lay,' and in the long run it will pay you best; an honest, fair way will always win in the long run."

The tenant who makes the highest bid is not always the most profitable man to have on the farm. Landowners have too often overlooked the importance of having a thorough understanding as to the way in which the land is to be used and the condition in which the land and the buildings are to be left at the end of the tenancy. A tenant can well afford to offer an extra high rent for the use of the land for a year or two if he is free to plow up the rich old pastures, produce the most exhausting crops, and take no care to leave the farm in condition for making a profit in the future. No landlord can afford to sacrifice his capital for the sake of reaping a high rate of interest on his investment for a short time. It is very important, therefore, that the conditions of farming should be such as will guarantee that the farm will be returned to the landlord in as good condition as it was at the beginning of the tenancy. This is not a matter that can be provided for perfectly in the contract, even if the tenant gives bond. To have to appeal to the law to enforce one's rights is always undesirable. It is better to take a smaller rent from a fair-minded man who can be trusted to

do the right thing, than to take chances on a man of doubtful character. In European countries where state-owned lands are let to tenants the principle is well established that farms will not necessarily be let to the highest bidder.

In share tenancy the ability of the tenant to manage a farm is a matter which should receive more attention on the part of the landlord than the exact terms of the contract. On a given farm, stocked in a given way, one tenant will be able to sell \$3000 worth of products each year, and keep the farm in as good condition as another tenant who may not be able to sell more than \$2500 worth of products. If the land is let for one-half of the proceeds, this will make a difference of \$250 in the income of the landlord. In order to get the better tenant, therefore, the landlord can afford to be liberal in making the bargain. Even where the share of the product to be received by the landlord is fixed by custom, there are many points, such as the landlord's share of the poultry, the paying of the thrashing bill, the twine bill, the amount of free garden land, the free use of milk for the tenant's family, the colts, the horse feed, etc., regarding which the landlord and the tenant must bargain. Here is the opportunity for the owner to be liberal and get a good tenant.

Where land is let, in accordance with the customs of the district, for one-half of the proceeds, it is often more important to the tenant that he should look out for the best farm, owned by an agreeable and far-sighted landlord, than to stand out too strongly on any small matter of detail as to what the landlord shall furnish. The same labor and capital may easily bring a return 20 per cent larger on one farm than on another in the same neighborhood, and this will more than compensate for being liberal in matters of detail.

When the landlord seeks the best tenant he can get, and the tenant seeks the best farm he can get, the result is likely to be that the best tenant will be on the best land, and while the tenant profits by being on the better land, the landlord profits equally by having an excellent tenant on his farm. Large numbers of farmers have mentioned this point, and they generally

agree that the best tenants do get the best rented farms, and that the inefficient tenants have to take what they can get, which is usually the more sterile or run-down farms. One landlord expressed himself as follows on this point :

"If you mean by the *best tenant*, the one who takes proper care of the soil, and then makes the most money, one year with another, the best tenants are on the best land. A good tenant gets a good farm, and he can hold it. The inefficient tenant is always looking for a farm and the landowners with good farms want only the best tenants; so the inefficient tenants are crowded to the poorer grades of land."

Time of paying rent. The lease should be most explicit as to when payment of rent is to be made. Where the land is let for a share of the proceeds, the common practice is to divide the money as soon as the sales are made. It is very common for the division to be made at the creamery or cheese factory, and one check is sent to the landlord and another to the tenant. Where land is let for cash, the practice varies widely, and yet there is a tendency to make the time of payment conform to the time when the tenant is likely to make sales. One-half at the middle of the year and the remainder at the end of the year is a common practice, with the modification that in the case of the last year of the tenancy all payments shall be made one month before the end of the year. Monthly payments are being introduced on dairy farms which are let for cash. This conforms to the time of receiving payments for the milk and grows very naturally out of a change from the share system to the cash system on dairy farms.

Guarantee that the rent shall be paid. In many of the North Central states, laws have been passed during recent years which declare that the landlord shall have a lien for his rent upon all crops grown upon the leased premises. In others there are no statutory laws providing for a landlord's lien, although, of course, a lien can be created by agreement of the parties, if properly made, and it is quite common to have a clause in the lease which secures the payment of the rent. In some cases the owner of the land requires that all of the products shall remain his property until the rent is paid, and in some cases the

tenant is authorized by the landlord to market the products in sufficient quantity to pay the rent, after which he may dispose of the remainder of the produce as he pleases. In some cases the tenant gives a chattel mortgage to secure the payment of the rent.

It is common for the landlord to remit a part of the rent in case of a great disaster over which the tenant had no control, and which makes it impossible to pay the rent from the year's productions. This should become a well-established custom. Good customs do much to insure happy relations between landlords and tenants. The best landlords realize that food for the family of an honest, industrious tenant should come before the landlord's rent. Well-established customs impel the less well-disposed landlords to live up to the standards established by the better landlords.

Enforcing the agreements. The lease should provide for enforcing the contract. Fines are sometimes provided in case of failure to conform to the contract either by omission or commission. It is sometimes agreed that in case either party shall fail to perform his part in the agreement, as illustrated by an example of the destruction of weeds by the tenant or the making of an improvement by the landlord, the other party may hire a third party to carry out the terms of the agreement and charge the costs against the crop or against the rent, as the case may be.

It should be provided in the agreement that in case either party fails to perform his part, the tenancy may be brought to a close, by due notice, at the end of the current year. As a rule it is unwise to be strenuous in enforcing the terms of the contract. In case either party fails to perform his part in the contract to such an extent that appreciable loss results, it is better to bring the contract to a close.

While a change usually results in some loss, it is better than tolerating excessive negligence. New agreements are better than old agreements. The landlord tries harder to please a new tenant than an old one. The new tenant operates under a new stimulus, his expectations are high, and his work moves with renewed energy.

Notice to terminate lease. Where land is let from year to year or for one, three, or five years, with the understanding that the tenant may remain as much longer as it is mutually agreeable, it is common to include a clause in the lease to the effect that (after the fixed period has elapsed) in case either party desires to bring the tenancy to a close at the end of the year, he must give the other party written notice to that effect ninety days (sometimes six months) prior to the end of the year. In the absence of any notice, the contract is to be considered renewed for another year.

CHAPTER XXIII

FORMS OF LAND TENURE IN THE UNITED STATES (Continued)

Share versus cash rent. Is it better to let land on shares or for cash? The answer to this question depends largely upon the amount of time the landlord can give to the supervision of the farm and to the amount of money and ability possessed by the tenant. The landlord who lets land on shares must give much attention to the management of the farm, but he who lets his land for cash need give little attention to the farm beyond the securing of the right tenant under proper agreements. Share tenancy usually yields larger returns to the landlord than cash tenancy, because he renders more service, takes more risk, and often furnishes more of the capital.

The tenant with little capital and but little experience in farming finds share tenancy better than remaining a hired man. Compared with the cash tenant he is more dependent and may make less money, but if he lacks the capital and skill to succeed as a cash tenant he will find share farming under the supervision of a landlord who has been a successful farmer more profitable, as well as a more independent life, than working for wages. For many young farmers a period as share tenant under the supervision of a good landlord who is himself a successful farmer is a most valuable apprenticeship in farm management.

Share tenancy. Share tenancy is more common than cash tenancy in the United States. In 1910 there were 1,399,923 tenants whose entire rent was paid in the form of a share of the product or a share of the proceeds. There were 128,466 who paid rent in the form of a share of the product and who paid a cash rent in addition usually for a part of the farm, the proceeds of which were not shared with the landlord. There were 712,294 tenants reported as paying a cash rent solely, but a

very large part of these paid a fixed quantity of produce, for example a fixed amount of cotton is paid for a given area of cotton land, instead of a fixed amount of cash rent.

Share tenancy is preferred by many tenant farmers because the risk is less than in cash tenancy. The thought of paying a fixed rent whether the crop is large or small and whether the prices are high or low is not attractive to the majority. And again, many of the tenants do not possess sufficient wealth to enable them to own all of the stock necessary to operate a farm on a cash basis.

The landlords who live in close proximity to the land which they let, and who have time to devote to its supervision, usually prefer a share of the crop because they find it more profitable to them. The share system is more profitable to the landlords largely because of the close supervision which they give to the farms let on shares. Many of the tenants are young and inexperienced, and are willing to leave the general management of the farm to the landlord, who is very likely to be an elderly farmer, and the fact that he has a farm to let suggests that he has been a successful farmer. All tenants are not so willing to be directed by their landlords, but if they pay a share of the products as rent the landlord's right to give advice is apparent and is a well-established custom, whereas under cash tenancy there has seemed to be less reason why the tenant should be compelled to accept interference on the part of the landlord. The principle being established that the landlord has a right to direct more or less definitely the operations of the farm, as in the case of share tenancy, the landlord has little difficulty in so directing the management of the farm as to preserve the fertility of the land. The choice of crops, and the organization of the field-system are subjects which the share tenant is usually willing to leave to the landlord, and in many cases the landlord controls the field operations in the minutest detail. For example, the depth to which land is to be plowed, the time of sowing, planting, harvesting, and the number of times a field of Indian corn should be cultivated are details to which the landlord often gives his attention under this system of letting

land. The landlord is willing to exert himself for these purposes because his profits are increased by such activity.

Another reason often given by landlords for preferring a share of the crop to a cash rent is that, in a country where most of the tenants have little wealth, a share of the product proves more profitable to the landlord, in the long run, because he shares the benefit of an extra large crop and gets something out of the smallest one, whereas in case he is receiving a fixed rent, the tenant gets all the advantage of an extra large crop, but in case of a crop failure the tenant is often unable to pay the fixed rent and the landlord has to stand the losses when the crops are short without getting the advantage of the extra large crops. Where the tenants are men of considerable wealth and can stand a loss from time to time this is a matter of less importance.

Again, it is said that the collection of the rent is an easier matter where a share of the crop is given. "Farmers will give a fifty cent chicken for a church dinner when they would not think of giving as much as twenty-five cents in cash," says an Iowa farmer who has tried both systems, and he continues, "They will give the landlord his share of the farm products much more cheerfully than pay him cash."

The share rent adjusts itself to changes in the value of the products without any change in the contract. This is looked upon by some farmers and landlords as a reason of first importance for adhering to the share system.

Participation of the landlord in the management of the farm is the chief reason for the success of share tenancy in this country. This point has been emphasized over and over again in the communications received from men who are in a position to know. Share tenancy is, as a rule, more profitable to the landlord only when the farm is under his immediate supervision. If the management must be left entirely to the tenant farmer, the cash system is usually preferable to the landlord. If the tenant is a capable manager, so that the supervision of the landlord adds nothing to the product, then it is better for the tenant to pay a fixed rent, if he has the capital to do so, and secure the extra profits due to his superior ability.

The methods of letting land on shares are so varied that a brief description of the forms of share tenancy is essential to an understanding of the subject. Share tenancies vary with respect to:

- (a) The proportion of the product received by each party.
- - - - - (b) The equipment and supplies furnished by each party.
- (c) The degree of control exercised by each party.

These characteristics of the share systems of operating land will be described for the various parts of the United States under a classification based on the share received by the landlord. The other characteristics will be discussed under sub-headings.

The one-fourth system. One-fourth the product as the landlord's share is the lowest share rent which has been found to exist

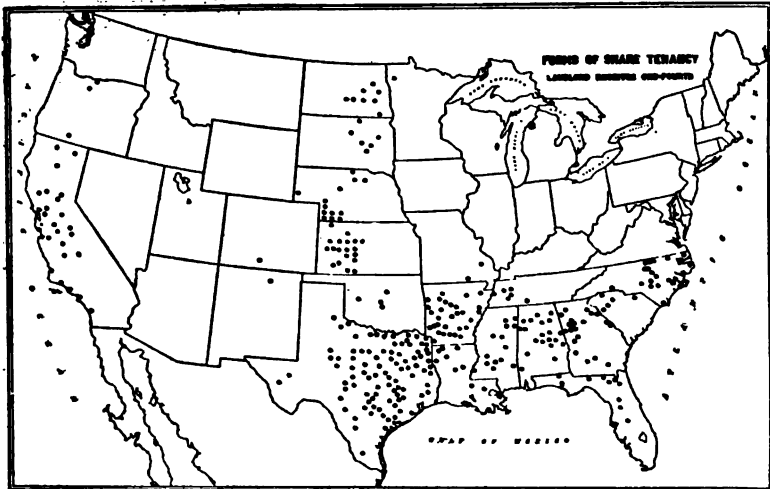


FIGURE 18

in an important way in the United States. This system was found on the western edge of the wheat region of the Dakotas, Nebraska, and Kansas, and also in Oregon and California in the first decade of this century. In general it may be said that the one-fourth system existed in the North only on relatively

unproductive lands. In the South the practice of giving the landlord one-fourth of the cotton crop was very common wherever white tenants engaged in cotton production. It was there most generally found in conjunction with a "third" system for the grain crops. It is common in the South to speak of the "third and fourth" system, which usually means that the landlord receives one-fourth of the cotton and one-third of the grain crops.

In the "fourth" system the tenant usually furnishes all the equipment and seeds, but in case commercial fertilizer is used, as is sometimes the practice in the cotton country, the landlord pays one-fourth the cost. In the northern states the landlord often furnishes nothing but the bare land for one-fourth of the crop.

Under the fourth system the tenant is usually left free to produce the crops as he pleases, the landlord exercising little control beyond the determination of the crops to be grown and the area of each.

The one-third system. The one-third system is very common throughout the United States with the exception of the regions

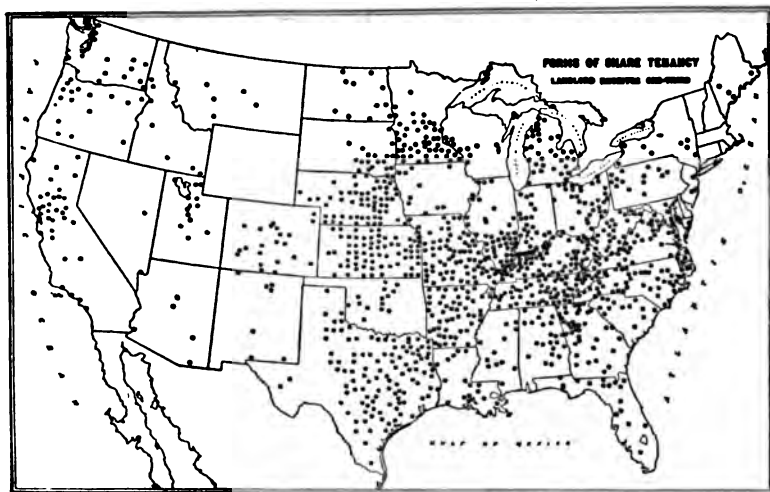


FIGURE 19

of very high land values in the North Central states. Under this system the landlord receives one-third the grain and sometimes he receives all the straw and corn stalks and stands none of the expense of production.

The landlord receiving a third of the produce usually furnishes no part of the operating equipment of the farm. In many instances the tenant pays a cash rent for the house in which he lives and for pasture for his live stock. In many other cases fields only are rented for one-third the crop. The tenant lives on the land which he may have bought or leased and takes two-thirds the grain and leaves the roughage on the farm where grown. Where the "third" system exists with respect to grain crops, the hay crop is usually shared half and half.

Where land is let for one-third the crop, the landlord usually controls in detail the kind of crops to be grown on each field. Beyond this he leaves the tenant to do much as he pleases.

The two-fifths system. In the Corn Belt the two-fifths system has been an intermediate stage in the rise of share rents from

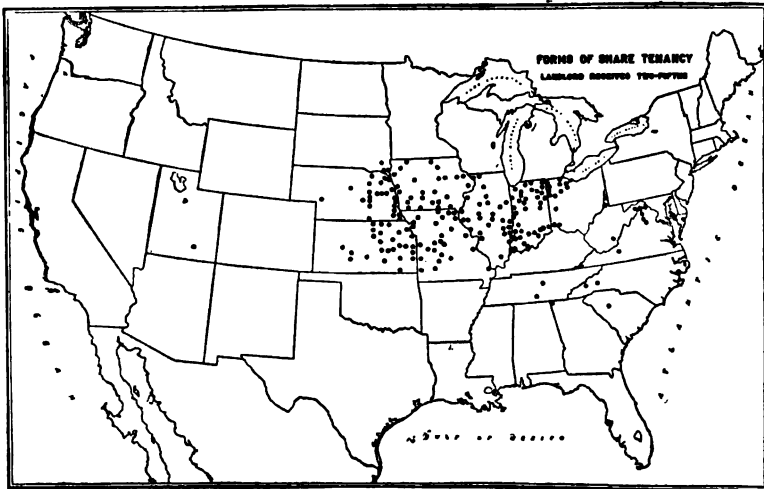


FIGURE 20

one-third to one-half the crop. This system differs from the "third" system primarily in the fact that the landlord receives

two-fifths of the grain, straw, and corn fodder, and the tenant receives three-fifths. The system is usually the same as the one-third system so far as what the landlord furnishes is concerned and also with regard to control.

The half-share system. The letting of land for one-half the product is found in all parts of the United States. The half-and-half system varies greatly with respect to what the landlord furnishes in addition to the land and buildings.

Grain farming on the half system. In one form of half-share tenancy found in the grain regions of Minnesota, Kansas,

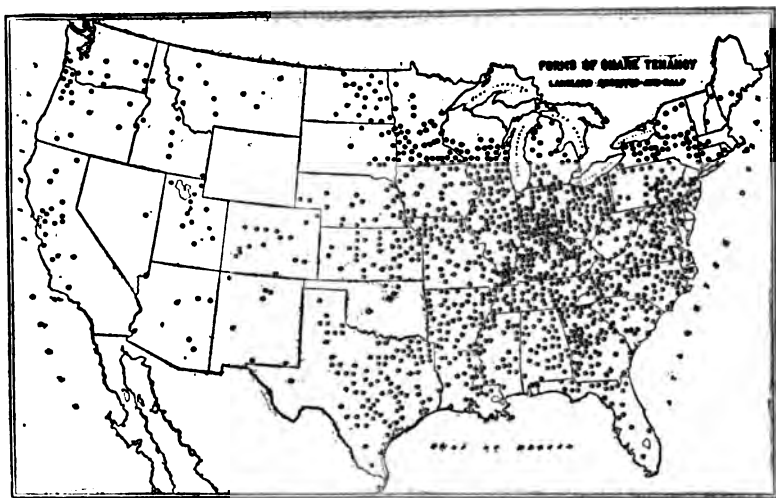


FIGURE 21

Nebraska, the Dakotas, and in the wheat regions of the Pacific coast, the landlord furnishes the seed grain and gets one-half the crop. In these regions it is often counted that one-half the crop, when the landlord furnishes the seed and pays for one-half the time and threshing, is equivalent to one-third the crop where the landlord does not furnish the seed.

In central Illinois and in west-central Indiana the landlord who receives one-half the grain crops furnishes nothing but the land and buildings and exacts a cash rent for the land used

for hay and pasture. The exacting of a cash rent for hay and pasture land often accompanies the share system in the North Central states, where the landlord receives one-third or two-fifths, as well as where he receives one-half of crop. In the South, corn land is sometimes let for cash, while cotton land is let on shares. In central Illinois, the landlord sometimes demands half the grain and one dollar per acre in addition, and it is the regular thing to require that the tenant deliver the landlord's share of the grain at the nearest market at such time as the landlord may desire to dispose of his share of the product. It is in the heart of the Corn Belt of central Illinois that the landlords are able to make the heaviest demands upon their tenants.

In eastern Ohio, in Pennsylvania, Maryland, and some adjoining territory where wheat has long been considered central in the

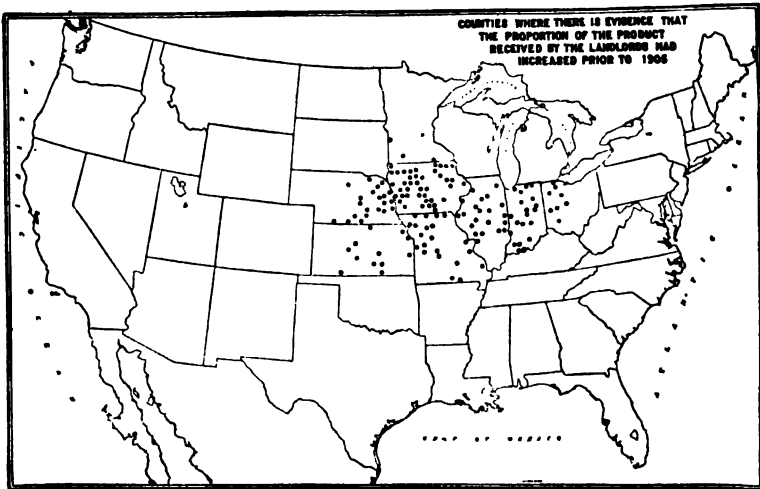


FIGURE 22

farming system, the landlord who receives one-half the grain usually lets the tenant have the use of the buildings, the hay and pasture land and all the straw he cares to feed on the farm, without any additional compensation. This custom is held to rather tenaciously and in one instance the writer found a tenant who was making about one hundred dollars a month

from his dairy. This was appreciably more than the entire value of the grown crops, yet the landlord continued to accept one-half the grain and let the tenant have all he made out of the dairy.

The land-and-stock share system. Another form of the half-and-half system is the land-and-stock share system, in which the landlord furnishes a part of the live stock or owns a half interest in all or a part of the live stock. This system is most common in the dairy regions of New York, Ohio, Illinois, Wisconsin, Iowa, and Minnesota. The variations are numerous, but the system has many features which are in general use.

The landlord furnishes the land and the buildings including the house for the tenant. The tenant furnishes the horses, tools, and machinery, and all the labor required to operate the farm. The landlord and tenant own, jointly, the cattle, hogs, and poultry kept on the farm. The items of expenses are likewise in three classes. The landlord furnishes material for making repairs and the tenant performs the work, unless a skilled workman is required, in which case the landlord pays for the mechanic. The tenant stands all expenses in keeping his horses, tools, and machinery in working order. Expenses for twine, thrashing, silage cutting, etc., are usually shared equally. The dairy equipment is often owned jointly. This refers especially to the cream separator and shipping cans. A common variation of this system is for the landlord to furnish all the cows. This is more or less common on the less valuable dairy farms of Wisconsin and is often found in New York.

The land-and-stock share method of letting land has been in use in the United States for more than a hundred years. During this time a large number of questions with regard to the duties and privileges of landlords and tenants have arisen. It may be beneficial, therefore, to take up these questions one by one, and indicate the way in which they have been answered.

Ownership of the partnership property. Where the landlord agrees to furnish half of the live stock and the tenant the other half each party should own an undivided half interest in the stock. A partnership herd, for example, in which the tenant

owns 12 certain cows and the landlord 12 other certain cows is sure to give rise to trouble. There should be a description of all partnership property possessed at the time the contract takes effect, and an agreement as to the number of cows to be kept, the number of pigs reared, etc.

At the beginning of the tenancy the stock which each party wishes to put into the partnership should be carefully appraised and the difference in value settled in cash. This means that the landlord buys a half interest in the tenant's cows, hogs, chickens, etc., and the tenant buys a half interest in the cows, hogs, chickens, etc., placed on the farm by the landlord.

Where the landlord furnishes all of the cows, provision must be made for maintaining the herd by replacing old cows with young ones produced upon the farm. The money received for the cow sold is divided and the young cow reared by the tenant becomes the property of the landlord.

Description of property furnished by tenant. It is the most common practice for the tenant to furnish the teams, tools, and machinery. The income of the landlord is influenced by the character of these equipments. Hence there should be a written agreement as to how many horses are to be kept and the kinds of tools and machinery to be used. Especial care should be taken to have an understanding regarding the *manure spreader*, the *silage cutter*, the *cream separator* and any other equipments which may be needed on the farm but which are not commonly found in the tenant's outfit.

Description of labor to be employed upon the farm. It has always been the rule to have in the lease a careful description of the land. In share tenancy it is equally important to have a careful description of the labor supply to be furnished by the tenant. Where land is let on the land-and-stock share system it is common to speak of the arrangement as a partnership in which the labor balances the land. It is obvious, therefore, that some more or less definite amount and quality of labor should be agreed upon. This agreement is desirable for the reason that the interest of the landlord leads him to desire a large amount of labor on his land, whereas the interest of the

tenant leads him to cut down too much on the labor bill. Trouble can be avoided by agreeing in advance upon the amount of labor to be provided by the tenant.

Horse feed. Where the tenant furnishes all of the horses to operate the farm, which is the most common practice, the question has arisen as to whether these horses should be fed from the undivided grain and hay or from the tenant's share of the grain. This has generally been settled in southern Wisconsin in favor of feeding the horses from the undivided grain and hay. In some districts, where grain farming is an important adjunct to dairy farming, the landlord furnishes all of the seed grain, and the tenant is required to feed his horses from his share of the grain, but may feed them from the undivided hay.

Where special circumstances give rise to opportunities for the profitable employment of the tenant's horses in hauling stone or some other materials, landlords have sometimes objected to such employment, but this outside work should be discouraged only to the extent that it may encroach upon time required properly to perform the farm work. The tenant should furnish the grain fed to the horses during the time they are employed on outside work of this kind. In general, it is better for the landlord to let land for cash where there is regular opportunity for outside employment. This opportunity will enable the tenant to pay a higher rent than he could otherwise pay. This point should not be overlooked by the landlord.

Colts raised by tenant. Where the horses have been fed from the undivided grain, the question has arisen as to the ownership of the colts in case any should be raised. It is contended by the landlord that if the colts eat undivided grain there should be some method of remunerating the landlord. It is also claimed that brood mares require more feed per unit of work performed on the farm than do other horses, and for this reason the landlord should have an interest in the colts. On the other hand, it is claimed that considerable risk is taken by the tenant where colts are raised and that if the landlord does not share this risk he should not share the colts.

This problem has been solved in various ways. In many

cases the difficulty has been avoided by raising no colts. In some cases the amount of feed consumed by the colts has been accounted for. This is not a very satisfactory method. In other cases the expenses involved in the rearing of the colts have been shared equally and the colts have been the common property of landlord and tenant. Where this practice is followed the landlord should stand the entire charge for stallion service to balance the risk taken by the tenant. In still other cases this problem has resulted in the landlord owning a half interest in the horses. Where horse breeding is to be any important part of the farm this is the best plan.

Poultry. The most approved method is to own the poultry in partnership, feed it from the undivided grain, and divide the proceeds. In some instances the tenant is allowed what poultry and eggs he desires for home consumption, and where sales are made the proceeds are divided. In other agreements the landlord is to receive an amount of eggs and poultry equal to that consumed by the tenant, and the remainder sold and the proceeds divided.

Thrashing and twine bills. The thrashing bill is usually shared equally by landlord and tenant, but landlords do not so generally share the twine bill, yet on a very large share of the farms the landlord has found it necessary to agree to pay one-half of the twine bill in order to secure the tenant desired.

Corn shredder, silage cutter, etc. In recent years the introduction of the corn shredder, the silage cutter, and the corn binder has brought new problems. These machines are not in use on all farms, and where they are used there is no settled practice as to who shall pay the bills. This is a point on which the parties use their bargaining power. It is here argued, for example, that the shredder saves the labor of the tenant, and that the tenant should pay the shredder bill. On the other hand, the landlord has to admit that the use of the shredder results in better care of the fodder, and leaves the manure in much more desirable form to be spread upon the land.

Terms gradually improved for tenants. During the last 50 years the conditions of this form of share tenancy have, on

the whole, become more favorable to the tenant. In the earlier days, when the butter and cheese were made on the farms, the labor was performed by the tenant, or, more often, by his wife. The introduction of the creamery and the cheese factory has relieved the farmer's wife of this task, and the expense of manufacturing these products in the creamery or the cheese factory has been shared equally by landlord and tenant.

Management of the farm. The landlord usually participates in the management of the farm where the land-and-stock share system is in use. This custom arises naturally out of the fact that the landlord has a very large investment and is depending upon the management of this property for his income. On the other hand, the tenant is usually a young man, of much less experience than his landlord and finds it profitable if not always agreeable to his own feelings to be guided by the experience of the older man.

It is usually stated in the agreement that the farm shall be managed by mutual agreement of the landlord and the tenant. It seems to be generally conceded by the tenant farmers that where land is let on shares the landlord has a right to participate in the management.

Sharing the proceeds. The landlord and the tenant share equally the proceeds of all sales and all increments and decrements in the value of all partnership property. The division of income should be made at once upon its receipt where large sales are made. Small items should be settled once a month. It is common, where milk is delivered to a butter or cheese factory, to have separate checks made out for the landlord and for the tenant so that no occasion for trouble may arise in making the division.

Division of partnership property at termination of lease. The most favored system seems to be that of requiring the tenant to divide the partnership stock of each kind into two equal groups. Where the units are large, as in the case of the dairy herd, it is common to balance small differences with a fixed amount of cash. For example, if after every combination has been tried one bunch is thought by the tenant to be

worth \$20 more than the other, it is agreed that the person taking the more valuable herd shall pay to the other \$10 or half the difference.

The tenant having made a division of each kind of stock, either of two methods may be used in determining which group will be left for the landlord and which taken by the tenant. One method is to draw lots. This method is good because the tenant, knowing he stands an equal chance of getting either group, will strive to make the groups of equal value. It is even permissible under this system to have the landlord assist in making the divisions.

Another method of determining which group the tenant shall take is to let the landlord have his choice of the groups arranged by the tenant. This is a less satisfactory arrangement for the reason that the tenant knows the record of the cows better than the landlord, and where this plan is followed it is possible to get the more profitable cows into one bunch and the better appearing cows in the other in such a manner as to make the tenant reasonably sure to get the more profitable cows.

Another system of making a division of the jointly owned property is for the landlord and the tenant to take turn about in choosing from the herd or flock. This plan has been objected to on the ground that the party who is the better judge of live stock, or who may be the more familiar with the live stock, has a decided advantage over the other party.

Still another system is to have the live stock appraised by disinterested parties and the interest of one party purchased by the other. Where the landlord and the tenant fail to agree upon any other method, a public sale may be called and the live stock put up at auction.

Croppers. The form of half-share tenancy found in the cotton and tobacco regions of the United States requires no capital on the part of the tenant. The landlord furnishes the land, buildings, teams, tools, and other equipment, and often advances the tenant enough goods, money, or credit to live on while "making" the crop. The tenant, or cropper as he is commonly called in the South, furnishes the labor required to produce

and harvest the crop. The cotton cropper receives one-half the value of his crops and free house rent and garden as pay for his efforts. In many of the cotton regions the cropper is not an independent operator. This is especially the case on the rich cotton lands where the plantation is the effective means of organizing and controlling a class of tenants who are differentiated from wage hands principally by the fact that they receive a share of the crop instead of a fixed wage. The system of control on a typical cotton plantation in the Yazoo delta of Mississippi has been described as follows:¹

"While there are some small holdings, a large proportion of the land is cultivated under a plantation system, white overseers manage the plantation and direct the cultivation from seedtime until the cotton is ready for market. The plantations are cut up into tracts varying somewhat in size, but usually from eighteen to forty acres in extent; on each tract is a cabin of two or four rooms and a 'lean-to'; at a little distance is a cotton house for storing seed cotton during the picking season. Around or back of each cabin is usually a patch of ground, perhaps half an acre, for a garden, often inclosed by a paling fence, which serves as firewood in the winter season. Each house is occupied by one or two families, who cultivate the allotted land about the house, either as renters or croppers.

"The cropper works like any wage laborer; and the daily routine has a distinct flavor of the ante-bellum plantation régime. The bell is rung at daylight during the cultivating season, the negroes gather at the lot where the mules of the plantation have been penned and fed during the night; each one receives his mule from the caretaker, and if he needs a new implement he gets it from the implement storehouse upon order from the manager; he brings it back when he has finished using it. Each man works with his family in his own lot; the overseer endeavors to visit each lot twice a day to see that the cropper is working and to direct him in his work, set his tasks, and instruct him in their performance. At noon, the bell rings again, the mules are brought in, fed by a man in charge, and taken out after the nooning is over. At sunset, or a little later, the plantation bell rings again, the negroes stop work, and the mules are brought to the common lot to be fed and shut up for the night. From first to last every bit of work is supervised, the culture planned, the

¹ In unpublished manuscript prepared by A. E. Conce.

amount and area of crop dictated by the overseer, the cotton picked, ginned, and baled under supervision, the corn harvested and housed, the produce divided, the indebtedness deducted, and the balance turned over without a word on the part of the cropper.

"Mules are kept in a common lot simply to insure good feed and care, and to prevent their being ridden at night or on Sundays and holidays by the negro. When the cropper's lot is at some distance from the mule lot and he is a reasonably careful man, the mule remains in his charge from Monday morning until Friday night or Saturday noon, when it is brought back again to the mule lot. This one item of plantation management has been a source of great saving both in efficient work and good work stock to the planter and fruitful cause of the change from share to fixed rent on the part of the negro."

"The cropper," often called "halves" in the upland counties, is usually found working on a verbal contract with a small landowner or a credit merchant who has a large number of farms in his possession. If a merchant is his landlord, he is under supervision from March to December. "We oversee all our share hands," said a Holly Springs merchant who owns thousands of acres in Marshall and Lafayette Counties, "we don't 'suggest' or 'stipulate'—we 'dictate' what crops they shall raise, and where they shall raise them. We require cotton mostly, but we insist that they raise sufficient corn and fodder to feed our mules during the winter season, from January 1 to April 1, when we keep them in our own lots." The supervision is not nearly so close as on the large plantation; a "riding boss" gets around to each farm two or three times a week and notes the needs and condition of the crop. But the share hand makes his own hours of labor, has command of the mule furnished him, and is really very much freer to come and go, to work and "lay off" than the cropper of the bottom lands. When the landlord is a small owner, or lives at some distance, the oversight is still less. The land is less fertile, more must be tilled to make a fair crop, the tools furnished are less modern than those of the large planter, the mules are less valuable, and the resulting cultivation is very poor. Many owners live in town some miles distant from their lands and take very little care of the share hand's crop.

The two-thirds system. Somewhat similar to the upland cropping system is a system found here and there throughout the northern part of the United States which may be called the two-thirds system. Under this system the landlord furnishes everything but the labor and receives two-thirds of the proceeds, while the tenant, or share hand, as he is more properly called, furnishes all the man labor and receives one-third of the proceeds of the farm. While this system is found widely scattered, it is not believed to be very common.

Cash tenancy. In 1910 there were only about half as many cash tenants as share tenants in the United States. While cash tenancy is common in the Corn Belt it is most common in certain parts of the Cotton Belt. Cash tenancy and negro tenancy are found in the same regions. In the Cotton Belt of Texas and in the northern part of Georgia, where white tenants prevail, share tenancy is dominant. When it is further noted that most of the so-called cash rent among negroes is paid in the form of a fixed amount of cotton without regard to its cash value, it will become evident that actual cash rent is a minor form of tenancy in the United States at the present time.

Landlords who live too far from their land or are too busy to give it the needed supervision for making share tenancy a success, usually prefer to let their farms for a cash rent. It is claimed by many landlords that the tenants devote much greater care to their farming under the cash system of letting land. The feeling that every extra bushel of grain and every extra fork of hay is all his own will naturally make the tenant more painstaking than he would be if only a part of these products were to be added to his own profits.

This desire to obtain as large a return as possible is, at the same time, the greatest source of trouble in adjusting the relations between landlords and tenants. The tenant who has a contract for but one year is inclined to look too strictly to securing as large a profit as possible for that one year, without any regard to the future. As a result of this short-sighted economy, too large a proportion of the land is often devoted

to exhausting crops, and the larger profit of the one year is obtained at the expense of the profits of future years.

By proper regulations with respect to the proportion of the land which shall be devoted to certain crops, this difficulty can be more or less successfully overcome, but such regulations are always annoying to the tenants. The granting of a lease for several years is thought by many to be all that is necessary to meet the difficulties arising from the short-sightedness of the tenants, but many landlords object to making a contract for a period of any great length. With all the difficulties which may beset this system, cash tenancy is preferable to share tenancy whenever the management of the farm is to be left almost entirely to the tenant, and where agriculture is extensive and the use of commercial fertilizers is unknown the letting of land for cash is a fairly successful method.

Where intensive culture and the use of commercial fertilizer have become necessary the tenant problem takes on a more acute form. If we would study to advantage the problems which arise under these conditions, we must turn our attention to an older country than our own, where the tenant problem has been a more serious one, and whence we may learn from the experience of others the remedies which are fast becoming necessary to good relations between landlords and tenants in this country.

The experience of England shows that the compensation for unexhausted improvements is more successful than long leases as a means of solving the problem of good farming by cash tenants. This system will be considered in detail in a later chapter.

Where land is let for cash rental the management of the farm falls definitely to the tenant. For this reason there is believed to be more occasion for restrictions in cash leases than in share contracts where the landlord is joint manager with the tenant.

Restrictions have not been numerous in American cash leases, but in Wisconsin for example, the following are restrictive clauses which have been found :

1. Specified parts of the farm shall not be plowed but shall be kept in permanent pasture.

2. A specified number of acres shall be kept in meadow, and old meadow shall not be plowed up until an equal area of new meadow has been successfully seeded.

3. No flax shall be grown.

4. Only . . . acres of tobacco may be grown.

5. Only . . . acres of cabbage may be grown.

6. No straw or fodder shall be sold from the place.

7. No hay shall be sold from the farm.

8. Instead of 6 and 7 another lease requires that enough stock be kept to consume all the grain and forage crops produced upon the farm.

9. Live stock shall not be allowed in the fields while the frost is going out of the ground.

10. Hogs shall be provided with nose rings in such a manner as will keep them from rooting up the turf when allowed in the pastures or fields.

Such restrictions, it will at once be seen, are intended to force the tenant into a conservative type of farming. The danger is that such restriction may so fetter the tenant as to make his farming unprofitable.

It has been stated most emphatically by an English authority upon this subject that "no landlord who is determined to introduce unreasonable and unnecessary conditions into his leases is entitled to or can expect to get first-class tenants. . . . There is no difficulty in getting inferior tenants to agree to any stipulated terms of management, but great caution is necessary in laying restrictions upon really good farmers. . . . The art of farming is progressive and cannot be fettered by any set of rules that are meant to be of universal and unvarying application. Hence, all the terms of farm leases should in one respect be of a most general kind. A good tenant ought not to be tied down with restrictions which can only be of service to the landlord in enabling him to prevent a bad farmer from injuring the land."

In this country, where cash tenants have been put under few restrictions, as in the eastern counties of Wisconsin, the results have been on the whole unsatisfactory. Cash-rented farms

are not, as a rule, so well kept up as farms which are let on shares. This is due in part to the fact that the owner is more interested in keeping up the buildings and fences on the farm where his income depends directly upon the annual value of the products, but where land is let for one year at a time, the cash tenant is interested in securing the largest possible profit for that one year, without regard to the condition in which the land may be left. Cash tenants have too commonly neglected to sow clover seed, to produce and spread large quantities of manure upon the farm, and to destroy noxious weeds.

The demand is for a system of renting land which will avoid the evils of soil robbery without the evils of too great restriction.

CHAPTER XXIV

THE DECLINE OF LANDOWNING FARMERS IN ENGLAND

Two hundred years ago landownership on the part of farmers was common in England, but by 1900 it was very rare. According to the estimates compiled by Gregory King, there were 180,000 landowning farmers and 150,000 tenant farmers in England in 1688. Ownership did not in all cases mean the same in England at that time that it does in the United States to-day. A man was classed as an owner if he paid about two-thirds the value of a piece of land for the right to the free use of the land so long as any one of three persons named in the lease lived. This was said to be leased out on lives. Again, there were *copyhold* tenures which gave a perpetual right to the use of the land with the provision, however, that certain payments — which frequently became nominal in amount — were made to the manorial lord from time to time in accordance with the customs of the manor. The tenure was permanent, and where all these payments were brought together and compared with a regular annual rent, they were very often small. It is fair to say, therefore, that toward the close of the seventeenth century more than half the farmers of England belonged to the landowning class.

In 1900, 86 per cent of all the land under crops and grasses in England was occupied by tenant farmers; while slightly less than 14 per cent was occupied by owners, but the owners were generally the great landlords, not landowning farmers. By making close inquiry while passing through more than half of the counties of England in 1899, the writer found a scattering few who owned the land which they cultivated, but such farmers were extremely rare. The greater part of the land designated as "occupied by owners" was composed of the "home farms"

of landlords, and of farms which they had not been able to let since the depression. In this way the Duke of Grafton occupied five farms besides his home farm, in 1899. The five farms aggregated five thousand four hundred and ninety acres. Each one of these farms, as well as the home farm, had a bailiff (manager) upon it. There were more than seventeen thousand (17,189) farm bailiffs in England according to the census of 1891. Tenant farmers who keep bailiffs are very rare. The vast majority of these bailiffs were, doubtless, operating land which is recorded in the Agricultural Returns as "occupied by owners." Hence "occupied by owners" quite generally indicates a lower status of the farmer than that of the tenant farmer, though in some instances it indicates land cultivated directly by the owner. Kent was a county noted for her landowning farmers in the years gone by, but in 1898 it was stated that "the small landowners have in most instances been compelled to sell their land, and the yeoman of Kent has practically disappeared."

To-day practically all the farmers in England lease the land which they occupy. The young man becomes a tenant farmer with the expectation of remaining such all his life. When money has been saved he looks for a larger farm where he may employ his surplus funds, but very rarely does he even think of investing in land. To an American this seems strange, and raises two important questions: First, what forces were operating in England to bring about so complete a disappearance of the landowning farmer? Second, what has been done in England to make tenant farming a satisfactory life for the farmer? The first of these questions will be discussed in this chapter, and the second will be discussed in the chapter on methods of adjusting the relation of landlord and tenant in England.

Many of the small landowning farmers disappeared as a result of improvements in the methods of farming during the eighteenth century. The names of Jethro Tull and Charles Townshend are associated with movements most significant in the history of English agriculture. These great agriculturists carried on their important experiments during the second quarter of the eighteenth century. With the name of

Tull should be associated the word *tillth*; and the fact that his contemporary was called "Turnip Townshend" suggests at once the phase of agricultural improvement in which he was interested.

Tull, in his "Horse-Hoeing Husbandry," emphasizes the importance of pulverizing the soil. "The chief art of husbandry is to feed plants to the best advantage," says Tull, and he believed that, in the feeding of plants, tillage is much more important than the application of fertilizers. He devotes one chapter of the book to the "Pasture of Plants." In this chapter he emphasizes the importance of dividing the soil into fine particles in order that the plants may find "pasture" for their roots. The important field crops of the time were all sown broadcast, so that it was difficult, if not impossible, to cultivate the crops while growing, and the only chance of giving tillth to the soil other than in preparing the seed bed was during the fallow year. To surmount this difficulty, Tull invented a drill, for the sowing of all kinds of grain and roots, in order that these crops could be cultivated between the rows while growing. He also invented a horse hoe with which to cultivate the drilled crops.

The name of Townshend is most closely associated with the introduction of turnips and clover into England, and with the reorganization of the English field system. The introduction of turnips, which could be cultivated while growing much more satisfactorily than could the small grains, enabled the farmers to dispense with the fallow wherever this crop would thrive. As the production of a crop of roots did not require a great deal more labor than caring for a bare fallow, it was only necessary that an increased demand for beef and muttons should increase the value of fodder crops sufficiently, in order that turnips should be very generally introduced. Upon the introduction of roots and clover, the old three-field system of crop rotation was replaced by the "Norfolk four-course system," which consisted of a root crop, followed by spring grain with which clover and grass seeds were sown; and the third year the hay crop was removed in time to plow the land for sowing wheat or rye.

To the names of Tull and Townshend should be added that of Bakewell — the third member of the trinity of great men whose names have been most closely associated with “the new agriculture in England.” Bakewell flourished at Dishley, in Leicestershire, from 1760 to 1795, and produced the necessary complement to good culture and fodder crops, namely, a breed of mutton-producing sheep and a breed of beef-producing cattle.

This “new agriculture” is of interest here because it led to an increase in the size of farms, and to the inclosure of the common fields, both of which movements had a marked influence upon the status of the landowning farmers. In the agricultural literature of the early part of the eighteenth century, one reads of the great benefits to be derived from the inclosure of the common-fields for the purpose of adopting the new agriculture; and these inclosures often involved the buying out of small freeholders who held rights over the commons along with the lords of the manors. Laurence, who wrote in 1727, taught with emphasis that “*A Steward should not forget to make the best inquiry into the disposition of any of the freeholders within or near any of his lord’s manors to sell their lands, that he may use his best endeavors to purchase them at as reasonable a price as may be for his lord’s advantage and convenience.*” Some instances there have been of stewards, who, after they have made haste to be rich, have made these inquiries for their own sakes, and have purchased out the freeholders, thereby making an estate for themselves, even within their own lord’s manors; insomuch that sometimes I have known it so ordered that the lord’s tenants have been called to do suit and service at his own [the steward’s] court. But, for the sake of honor and honesty, I hope these instances are rare; and so I content myself to have given this hint, *still persuading the vigilant steward to be zealous, for his lord’s sake, in purchasing all the freeholders out as soon as possible especially in manors where improvements are to be made by inclosing commons and common-fields;* which (as every one, who is acquainted with the late improvement in agriculture, must know) is not a little advantageous to the nation in general, as well as highly profitable to the Undertaker.”

The writer has not found evidence showing any great progress in this direction until later in the eighteenth century, but there is reason for believing that Laurence's advice was acted upon many times during the next sixty years. In 1786 Marshall records in detail an inclosure where the proceedings seem to have been in exact accordance with this advice.¹

Contemporaneous with the new agriculture, and perhaps it is not too much to say making the new agriculture necessary and possible, was the enormous growth of English manufactures and commerce. These lines of development greatly increased the demand for agricultural products so that by the end of the eighteenth century the price of such products had greatly risen. The high prices which could be obtained for the products of the farm gave high values to land and made larger farms and intensive culture extremely profitable. It required a great deal of capital to stock a large farm and cultivate it in accordance with the new methods. To own both land and capital required relatively great wealth; and the rural economists of the time advised farmers to use their capital in stocking large farms rather than to invest nearly all they had in buying land, in which case the farms would be too small and too poorly stocked to be most profitable. It came to be the argument that, whereas a farmer could realize no more than 3 per cent on investments

¹ "In the parish of Felbrigg, in Norfolk, some seven or eight years ago, Mr. Wyndham, who is Lord of the Manor, was also the sole proprietor in this parish, excepting one small farm, of seventy pounds a year, belonging to a young man, a yeoman, just come of age. An extensive, heathy waste, and some common-field lands, were desirable objects of inclosures; consequently, the possession of this young man's estate became an object of importance to Mr. Wyndham. Steps were accordingly taken towards obtaining the desired possession; not, however, by threats and subterfuges, too commonly but very impolitically made use of upon such occasions; but by open and liberal proposals to the young man, the joint proprietor; who was made fully acquainted with the intention; and frankly told that nothing could be done without his estate. He was, therefore, offered, at once, a specific and considerable sum, over and above its full value to any other person; and, to insure the object in view, he had, at the same time, an offer made him of a considerable farm, on advantageous terms. The young man being enterprising, and his little estate being, I believe, somewhat encumbered, accepted the offer, sold his estate, and agreed for a farm, consisting partly of old inclosures, in part of common-field land, and in a still greater proportion of the heath to be inclosed."

in land, he could make a profit of 10 per cent by using it in stocking a farm.¹

There is evidence that many landowning farmers became tenant farmers because they found it more profitable. For example, before the new agriculture was introduced there were many small owners in Norfolk who cultivated their own land. Instances are noted of parishes which had at one time been

¹ James Anderson is the author of a short article published in Hunter's "Georgical Essays," Vol. VI, p. 213 (York, 1804), which is entitled, "The Bad Consequence of a Farmer Lessening his Capital by the Purchase of Land." The article reads as follows: "Those who are fond of political calculations may have here full scope for their ingenuity, by supposing that two men of equal spirit, knowledge, and capital, set out in the agricultural line. One of them as a farmer, on a lease; and the other as a small proprietor, or yeoman. Let the capital be taken any how at random; say, £2000. The yeoman, we shall say, lays out £1500 of that sum in the purchase of a farm, which at thirty years' purchase [that is, thirty times the annual rent or annual value] would be worth £50 a year, and he has 500 left for stocking and improving it. The other leases a farm, which, at a fair rent, is worth £200 a year. Let us follow out the calculation, — first, in regard to the profits that the different occupiers themselves can enjoy, and the rate at which their families can afford to live; and, second, with regard to the augmentation of agricultural produce that each of them could afford to the state; and let this calculation be continued for a considerable number of years. Then strike the balance, and see what an amazing difference!"

Again, in recent times when the subject of restoring the old order of yeoman farmers was being agitated, James Caird (J. R. Agr. S. E., Series III, Vol. I, p. 27) gives a very clear statement of the problem suggested by James Anderson three quarters of a century earlier. Caird writes: "There are two capitals employed in British agriculture; that of the landowners and that of the farmer. The first, which is the land itself, and the permanent improvements upon it, had hitherto been certain and safe, and, therefore, yielding a small, but regular, return; the other, the livestock and crops, subject to risk of seasons, and speculations, and liable to compensation prices, requiring a much larger percentage to cover risk. The capitalist is content with 3 per cent for his heretofore secure investment, which carried with it also influence and social position. A farm worth £50 an acre for the freehold needs a further capital of £10 an acre to provide the farmer's capital for its cultivation. The landowner is satisfied with a return of 3 per cent on his £50, while the tenant looks for 10 per cent for management and risk and interest on his £10. Let us suppose that the farmer has a capital sufficient to buy 100 acres at this price, and stock them; he would get for his £5000, invested in freehold, £150, and for his £1000, farm capital, £100; together, £250. But if he followed the custom of his country and used the whole of his capital in cultivating another man's land, he would with his £6000 hire 600 acres, on which his returns ought to be £600. He, in truth, thus trades on the capital of the landowner, practically, let to him at the moderate rate of 3 per cent, which he converts into a trade profit on his own capital of 10 per cent."

occupied entirely by this class of farmers. But by 1787 there had been a striking decline in the number of those belonging to this class. Marshall says that the small proprietors saw all about them tenant farmers, whom they had held as their inferiors, reaping great profits and rising to a degree of affluence superior to their own. The tenant farmers were able to live in a style too extravagant for the small proprietors, and this naturally made the latter dissatisfied with their position, "and either launched out into extravagance ill suited to their income, or voluntarily sold their comparatively small patrimonies, in order that they might, agreeably with the fashion or frenzy of the day, become great farmers." The lands owned by these yeoman farmers fell into the hands of men of fortune and became united with their large estates.

The manufacturing industries did not merely expand during this period, they changed their form of organization; and this change in organization had an important influence upon the small farmers of England. As the factory system became established, the domestic system of manufacturing was no longer profitable, and the small farmers who had depended upon spinning and weaving for a part of their income were deprived of this means of supplementing the returns of their small holdings. Many of these small farmer-manufacturers were absorbed by the large industries of the towns, others turned their entire attention to agriculture and became prosperous farmers, while others were reduced, in time, to the ranks of the agricultural laborers.

But these are not the only ways in which the growth of manufactures and commerce influenced rural affairs. Many who had made their fortunes in manufactures or in commerce desired to own country homes. These country homes often consisted of very small areas with villas built upon them, but more commonly, owing to an "inordinate desire" to be connected with the new agriculture, the wealthy merchants and manufacturers purchased farms and operated them, not for profit, but for pleasure.

While farming for pleasure led to the buying out of many landowning farmers in the vicinity of the large centers of wealth,

this was of less permanent significance than the fact that many of the men who had acquired wealth wished to acquire social and political position; and this could be done most readily by becoming great landlords. This led many of the new men of wealth to buy land and establish their families upon large estates. This competition of rich men in the land market resulted in high land values relatively to the rental value of land, which made it all the more difficult for farmers to buy land. In these various ways the reorganization of agriculture in England at the close of the eighteenth century tended to reduce the number of farmers who owned the land which they cultivated, and to increase the numbers of great landlords and of tenant farmers.

Fluctuating land values and agricultural depressions hastened the decline of landowning farmers. The wide discrepancy between the rate of return on investment in land, and the rate of interest which farmers had to pay on borrowed funds, was a constant force tending to reduce landownership on the part of farmers. The work of the agricultural depression was that of speeding up the movement at times by reducing incomes and forcing mortgaged owners to sell their farms.

In the normal movement of affairs the farms passed from father to son, but it was usual for the other members of the family to be provided for. This usually meant that the son who took the farm had to do so under heavy encumbrance. It would appear that primogeniture and entail were institutions affecting the large landlords, but little practiced among the smaller owners, with whom the idea of more or less equal division of property among all members of the family prevailed. There were always many landowning farmers who were heavily in debt and to this class depression often resulted in forced sale. With wealthy lords always in the market for land these farms were absorbed into the large estates.

The depression in English agriculture from 1820 to 1836 resulted in a marked decline in landownership on the part of English farmers. The first twelve years of the nineteenth century were extremely prosperous times for English agriculture,

and until 1820 prices had not been reduced very materially; but from 1820 to 1836 prices were comparatively low. This era of low prices, following the great prosperity of war times, wrought disaster among all classes in England who were dependent upon agriculture for an income. Tooke attributes the high prices of one period and the low prices of the other to the war, the currency, and the variations of the seasons, along with a rapidly growing population engaged in manufactures and commerce. The war made the importation of food dangerous and expensive and a somewhat debased currency, and bad seasons at the close of the century, with an increasing demand for food, resulted in extraordinarily high prices. On the other hand, peace, a restored currency, and a series of excellent crops after 1819 resulted in a great reduction in prices.

The parliamentary report made by the Select Committee on Agriculture for the year 1833 shows large numbers of landowning farmers in the various parts of England at that date. Many of these men held estates which had been handed down from father to son for many generations, while large numbers had purchased the land they occupied. But these yeomen farmers were hard pressed and many had sold their land before 1833. When we go carefully through the minutes of evidence given before the committee we are especially impressed with the rapid decrease in the number of landowning farmers, which had taken place after the war, and before 1833. In Cumberland and Westmoreland the number had "considerably diminished." Up to the war properties had continued long in the same families, but in 1833, Mr. Blamire said he believed that since 1815 a greater change had taken place in the proprietorship of the small farms than in any antecedent period of much longer duration. In 1837, Blamire was again before the Committee, and says: "The condition [of the landowning farmers in Cumberland] is generally speaking most pitiable. At the present moment they are as a body, in fact, ceasing to exist at all." Mr. Merry, the owner and occupier of a three-hundred acre farm in the North Riding of Yorkshire stated that in the different dales in the district where he lived the farmers had

nearly all been "ancient freeholders"; but the number of such farmers had been "regularly lessening for ten years," during which time they had been reduced about a seventh. From Mr. W. Simpson we learn that the landowning farmers were "nearly all gone" near Doncaster, Yorkshire. In Nottinghamshire there were "comparatively very few remaining." In Leicestershire, Northumberland, and the Midland Counties, generally, small proprietors farming their own land were numerous, but "a great many of them" had been ruined. In Shropshire and in Cheshire the number of "small landed proprietors" had "greatly diminished, . . . since the year 1800." In Herefordshire there were still a great many yeomen but fewer than twenty years earlier. In Worcestershire a good many freeholders, who farmed their own lands, had sold out. In Kent, near Rochester, no great number had gone to the wall, but they were poor, many of them living little better than workingmen. Such farmers were yet numerous in Hampshire and West Sussex, but many had been compelled to sell their estates and those who remained were "much reduced in point of circumstances." In Wiltshire the number of landowning farmers had diminished "most materially" within the past fifteen years. In Somersetshire land had been changing hands a great deal since the war, and the number of farmers who bought land was not so great as the number of those who had sold. It was the custom there for the landlords to "run out" the life leases and not make any new ones. Thus all the evidence points to the conclusion that an unusually rapid decline of the yeomanry had taken place during the period of the agricultural depression which followed the close of the Napoleonic wars. We shall now investigate somewhat in detail the causes of this unusually rapid decline.

Extravagance, living beyond one's income, often leads to bankruptcy in all lines of business, and it would be strange, indeed, if this were not, occasionally, the cause which compels farmers to sell their estates. From John Norden we learn that in 1607 this was sometimes the cause of failure on the part of landowning farmers in England. In 1833 a great many

of the yeomen of Cheshire were living beyond their means. During the period of high prices they had accustomed themselves to a standard of living which they were unable to maintain after prices had fallen, without gradually consuming their estates. Lee says of this class, "Their property is nearly gone." There is a suggestion that a change of this kind in the habits of the yeomen farmers may have been the occasion of forced sales of land in Worcestershire and in Somersetshire.

But while extravagance may at times have been the cause of failure, the yeomen as a class were industrious and frugal. Speaking of the yeomanry of Cumberland, Blamire says, they "are quite as frugal as the tenantry and often more so, and their situation is often worse. . . . They equally lodge their laborers in their own houses, and dine at the same table with them." Having to give up their estates was "by no means the effect of improvidence on their part." Mr. W. Thurnall said that in Cambridgeshire the yeomen were very economical and always hard-working men. "There is not a more industrious man in the three counties," says J. B. Turner, "than a man in Herefordshire whose estate has been sold under bankruptcy."

It was not, as a rule, lack of frugality and industry which ruined so many of the yeomanry during this period of depression; it was primarily the fall in prices at a time when indebtedness was very prevalent with this class. This indebtedness was sometimes incurred for the purpose of purchasing land, sometimes for improvement, often to provide for the younger members of the family, and, occasionally, to cover general living expenses.

Mr. W. Simpson told the Committee of 1833 that the yeomanry near Doncaster were "many of them bankrupts." "Farmers who, having four or five thousand pounds, bought farms twenty-five or thirty years ago, borrowing part of the purchase money, have been obliged to sell, and they have nothing left." In Nottinghamshire "a great number bought land at high prices, and having mortgaged their farms for more than their value at the reduced prices, they have been

almost universally ruined." This class of farmers met with the same misfortune in Lincolnshire. In Cheshire, "A great many farmers got a considerable sum of money, and were mad to lay it out in land. They purchased land at forty years' purchase, in some instances, and borrowed probably half the money," and soon after, the produce sold for so much less than formerly that they could not pay the interest on the money they had borrowed and were "obliged to sell their properties for what they could get." In Shropshire, again, farmers paid high prices for land and "borrowed money, as much as they could sell the property for afterwards." These same stories are repeated for Norfolk, Hampshire, Somersetshire, Berkshire, and Buckinghamshire.

Improvements do not appear to have been very generally the occasion of indebtedness, but in some instances the witnesses before the Select Committee gave this as an important cause.

The provision for younger children, or the paying off of the other heirs when one member of the family took the estate, was often the occasion of heavy indebtedness. In Cumberland, the "statesmen" had large families and "from a miscalculation of their real situation" they left their children "larger fortunes than they ought to have done, and saddled the oldest son with the payment of a sum of money which it was impossible for him to pay." This is given as an important cause of indebtedness in Nottinghamshire, Somersetshire, Berkshire, and Buckinghamshire.

Thus it would seem that in 1833 these small estates were very generally encumbered. The indebtedness had been incurred during the period of high prices; and when prices fell the debt was often equal to, if not greater than, the value of the land. The whole net product would not, in many cases, pay the interest. Where this did not force the yeomen to give up their estates at once, the land usually came into the market at the death of the owner, as no member of the family cared, as a rule, to take up the burden of mortgaged ownership which had come to be looked upon as less desirable than tenancy. This fall of prices at a time when mortgages were very prevalent

was the immediate cause of the rapid decline in landownership on the part of farmers during the twenties, thirties, and forties of the nineteenth century.

When this land came upon the market it was usually purchased by great landlords, merchants, or manufacturers, who very rarely cared to put it upon the market again; and thus the results of this temporary depression have been more permanent than we should expect in a country where landownership on a large scale does not involve so many social advantages, and where systems of primogeniture and entail do not bind the large estates together permanently.

By 1836 the depression which followed the war had practically ceased and the period from this date until 1875 was, on the whole, an era of great prosperity for English agriculture, though the low returns on landed investments, lapsing life leases, forced sales for settling estates, etc., were gradually reducing the number of yeomen farmers decade after decade, until by the close of the third quarter of the century they were found only here and there; and tenancy was the rule. In 1883 John Rae estimated that probably not more than 5 per cent of the farmers of England owned the land which they cultivated, yet during this period of prosperity farmers sometimes purchased land. A slight movement in this direction to some extent counteracted the result of the tendency on the part of landowning farmers to alienate their estates.

By 1875 the foreign wheat supply had become more easily accessible, as well as more abundant; and the depression which followed ruined hundreds of farmers and rendered many of the landlords comparatively poor. In 1895 the Royal Commission on Agriculture sent assistant commissioners into the various parts of the country to gather information concerning the effects of the agricultural depression. Many of these assistant commissioners did not report upon the landowning farmers, possibly because they found no representatives of this class, but others have given valuable bits of information.

Cumberland still retained some of her "statesmen," landowning farmers, in 1895, but the problems of the second quarter

of the century were still confronting them. In consequence of the legacies and annuities which eldest sons had to pay on the basis of the high prices which prevailed before the depression of 1875, a great many yeomen farmers were "over head and ears in debt." Not only had prices fallen, but the number of years' purchase at which land could be bought had been reduced. These estates were usually mortgaged, and often so heavily that the farmer who nominally owned his land had more to pay as interest than the tenant farmers paid as rent. It is said that this class of farmers had been gradually decreasing in numbers for many years. This gradual decline is illustrated in a most interesting manner by the figures available for the parish of Abbey Quarter, as shown in Table XXII.

TABLE XXII

YEAR	NUMBER OF "STATESMEN"	NUMBER OF LEASEHOLDERS	AVERAGE SIZE OF HOLDINGS
1604.	83	None	42 acres
1648.	81	6	54 acres
1780.	51	9	58 acres
1812.	38	18	58 acres
1837.	30	20	100 acres
1864.	21	29	100 acres
1894.	9	41	100 acres

"There have been three causes for the gradual diminution in numbers of the statesmen," says Mr. Fox. "In the first place, many of them, tempted by the high prices offered for their land by large landowners, have sold. . . . Secondly, a number of them, since the lower prices, have let their land to tenants. But, thirdly, the qualities which are necessary to insure success on a small holding, and which should be conspicuous both in the owner and his wife, namely, energy and thrift, are not necessarily hereditary qualities . . . and there are cases where land has had to be sold because the mode of life, which was pursued by the father, and accompanied by success, was not acceptable to the son."

In Westmoreland the landowning farmers had gradually disappeared until, in 1895, they were nearly extinct. "However, we may regret the change," to quote Coleman, after Wilson Fox, "it appears to have been inevitable. Land is an expensive luxury, and not a profitable investment. As civilization progressed, and the cost of living increased, returns were not proportionately advanced. The land became gradually burdened with charges, and often suffering in condition, was eventually parted with, going as a rule to swell the larger estates. Nor as regards the public advantage, need such a result be lamented, for it is quite certain that a flourishing tenantry under a liberal and wealthy owner, are far more productive than owners whose means are too straitened to allow of the proper application of capital. Probably the most complete illustration of this change is seen in the Earl of Bective's fine property at Underly, which comprises about 25,000 acres. . . . A large part of this property was formerly owned by small proprietors, mostly statesmen. These men held on as long as possible, and were eaten up by debts and charges, and the soil wretchedly impoverished. The trustees of the late Alderman Thomson, who himself, if I mistake not, sprang from a statesman family, bought up the farms by degrees, and there is still money waiting similar investments. In no case did the investment pay more than two and three-fourths per cent on the purchase money. In many cases the former owners continued as the tenants; and when the land was drained and limed, and proper buildings erected, these men, who were formerly hard up, became well-to-do farmers. . . . The Underly Estate probably yields more than double the produce of which the land was capable when divided and ill managed."

Writing of this same estate, Lefevre gives some additional facts which are very interesting and give clearness to the picture. "This great property . . . was gradually accumulated and purchased under the express direction of the will of a man who, two generations ago, made a large fortune in trade, and whose only daughter married a nobleman. The estate was

made up of 226 different purchases, nearly all of them cases where the vendors belonged to the class of yeomen farmers, or statesmen, as they are called in that district, who, themselves and their ancestors, had cultivated their own lands for many generations. Instead then of 226 distinct owners of land, there is now a single owner. It may safely be assumed, in respect of this great property, that, under the existing system of family entail permissible by law, it will for generations to come remain intact in a single ownership."

Lincolnshire still possessed a large number of small peasant proprietors and some large yeomen farmers, in 1895. Many farmers had bought land during the prosperous times prior to 1875, and had paid double the price for which it would sell after the fall in prices had brought on the depression. A large proportion of the purchase money had frequently been obtained by giving a mortgage on the land, and in some cases the land had fallen in value until it was worth less than the face value of the mortgage. Fox says of these men: "Many . . . have already sunk, overwhelmed by the burden of interest they had to pay." Mr. Fox devotes several pages to the condition of the small landowning farmers of the southern part of Lincolnshire. Most of these people worked hard and lived poorly. In reading the report one might easily think Mr. Fox was paraphrasing Young's report on the same district, written one hundred years before, were it not for the further evidence of ruin on every hand. In speaking of these small proprietors, Fox says: "The possession of land has been the ruin of hundreds in the past and is a millstone around the neck of hundreds in the present. Not the least regrettable reflection in this sad story is that most of these small owners are the flower of a class, the pick of the foremen and the laborers, who excelled in the performance of their duties, who toiled and saved and denied themselves for years to raise themselves out of one class into another, and who, when they had bought their independence and a new social position, found themselves bound to admit failure, their hard savings gone, their energies wasted, their hopes crushed, to retrace their steps back into the ranks out of

which they had stepped, at a time of life when they had expended much of their vitality and all their ambition."

In Cambridgeshire the depression proved very disastrous to the farmers generally. The landowning farmers, burdened with mortgages, were the first to succumb; and those of this class who remained, in 1895, were in great straits. "In several districts," says Fox, "evidence was privately given me of this, and in one of them a gentleman, who was in the position to know the facts, stated that all the yeoman farmers there . . . were heavily mortgaged."

"We have had a good many yeomen in the County of Norfolk," said Mr. Read before the Commission in 1897, "and I say that they are much the hardest hit of all. They have to bear both the losses of the landlord and the losses of the tenant, and there have been the most disastrous failures. A good many of our farmers were told twenty-five years ago that the best thing that they could do was to buy their farms, and they did so, but they had not enough cash, and they had to mortgage their farms. They have gone to the wall worse by far than the common tenant farmers. There are a good many of our old and most respected yeomen who have disappeared within the last few years. I feel confident that they will almost all of them go unless there is a change for the better."

Speaking of Suffolk, Mr. Everett of the commission said, "We had a great many yeomen farmers and in the intense competition for land in the good times, a great many men took that course of making themselves, as they thought, independent; they bought land and mortgaged it, and I should think three quarters of that class of men are now stripped of every penny they had."

During the "good times," the farmers of Wiltshire saved money and many of them were able to purchase farms, but as in other places, they borrowed money and their investment proved disastrous. One witness cited four instances within his own knowledge of farmers who bought their farms about 1875. Of these, two had come to grief and absconded, a third had lost his farm, which was in the hands of the mortgagee, while the fourth was still holding his land.

In speaking of the condition of landowning farmers in general, the final report of the Royal Commission states that "As a rule their properties, whether inherited or purchased by the present proprietors, are charged with mortgages, and the mortgagee makes no remission of the interest due to him. In consequence of the shrinkage in the value of land, the interest on the mortgage has become in many cases a burden, which the owner has been unable to bear, and frequently where the yeoman farmer has succeeded in paying the interest due from him it has been a heavier rent than he would have paid to a landlord."

Thus it has come to pass that landowning farmers are rare and the tenant farmer employing a considerable number of agricultural laborers is typical in England to-day. Under conditions as they exist in England landownership is not economically profitable to the farmer. Whether tenant farmers are equally desirable citizens, and whether the nation which leaves the problem of landownership to the free play of forces which eliminate the small landowner and establish tenant farming on a larger scale with a large agricultural laboring class will prove to be as strong a nation as where the landowning farmer is established and protected is one of the great questions that should receive consideration by American statesmen to-day.

CHAPTER XXV

RELATIONS BETWEEN LANDLORDS AND TENANTS IN ENGLAND

So long as a country has an abundant supply of productive land, and its agriculture is characterized by the extensive use of the natural fertility of the soil, the adjustment of the relations between landlords and tenants is a comparatively simple matter. But when some of the elements of this original fertility have begun to show signs of exhaustion, or when the increasing demands of a growing population make it necessary that each acre of land shall yield a larger product, so that it becomes necessary to introduce a more intensive system of culture, involving investments which cannot be realized upon for several years, the tenant problem becomes a serious one.

The same progress which makes intensive farming necessary tends also to augment the numbers of those who must hire the land which they cultivate. With the growth of population, competition for the use of land becomes more and more keen and drives the price of land higher and higher. This makes it ever more and more difficult for the succeeding generations of farmers to acquire the ownership of land. Other things remaining equal, with the progress of society the tenant problem becomes more general as well as more difficult to solve.

England is preëminently the land of tenant farmers. Less than 14 per cent of the farm land of that country is reported as operated by its owners, and in most cases such land is operated by hired farmers, or bailiffs as they are called. About 86 per cent of the farm land of England is operated by tenants who pay a fixed rent for its use. Share tenancy is not practiced in England.

It was more than a century ago that the progress of English industrial society had reached the stage of development where

intensive agriculture was socially desirable, and also profitable to the farmers where their relations to the land were so adjusted as to guarantee to them just returns upon their investments. The earliest attempts at improving the agriculture of the country at once brought forward the tenant problem. In 1649 Walter Blith wrote:¹ "If a tenant be at ever so great pains or cost for improving of his land, he doth thereby but occasion a great rack upon himself, or else invest his landlord with his cost and labor gratis, or at best lies at his landlord's mercy for requital, which occasions a neglect of good husbandry to his own, the land, the landlord, and the kingdom's suffering."

For more than a century the rural economists of England have been trying to solve this problem. Hence it is in England that the tenant problem can best be studied in the light of history.

Prior to the introduction of the *new agriculture*, which movement became important during the latter half of the eighteenth century, the tenant farmers of England usually held their lands "at will," without any written agreements. Under this tenure, the common law and the customs of the estates formed the only tie between owners and tenants, and either party could bring the tenancy to a close, by giving six months' notice to the other.² Towards the close of the eighteenth century, it became a common custom, where land was held from year to year, to draw up legal agreements, by which the tenants bound themselves "to the fulfillment of certain clauses and conditions."³ But the most significant movement of this period was that in favor of leases for a term of years. The rural economists of that time were quite generally of the opinion that long leases were necessary wherever the farmers were expected to make investments in or upon the land, such as require several years to yield their full return. It was stated in 1799 that the improvements which had taken place in England prior to that time had been almost

¹ Thorold Rogers, "Work and Wages," pp. 458-459.

² Loudon, "Encyclopedia of Agriculture," p. 764; also, W. Marshall, "Landed Estates," 1806, p. 378.

³ H. E. Strickland, "Agricultural Survey of the East Riding of Yorkshire."

entirely due to the custom of granting twenty-one-year leases, and that where it was uncommon to grant leases for long periods of years, agriculture remained in a backward condition.¹

During the early years of the nineteenth century the English Board of Agriculture published a series of surveys which set forth the conditions of agriculture in every county of the kingdom. This material, supplemented by the other agricultural writings of the time, makes it possible to present, in considerable detail, the history of the attempts to solve the tenant problem in England by the introduction of long leases.

From these surveys it appears that the greater part of the tenant farmers of England one hundred years ago held their farms "at will," without written agreements, or "from year to year" under written agreements. In either case they might be thrown out of the possession of their farms on six months' notice, at the pleasure of the landlord. But while this was the dominant form of land tenure throughout the greater part of England, the use of long-term leases had greatly increased during the latter part of the eighteenth century, and leases varying in duration from three to twenty-one years were found in every county. Twenty-one-year leases were much used in the eastern counties, and leases running from seven to fourteen years were quite common in the western and southern counties. The county of Norfolk, the home of the *new agriculture*, was pre-eminently the land of long leases. Arthur Young wrote of this county: "The great improvements which for seventy years past have rendered Norfolk famous for its husbandry, were effected by means of twenty-one-year leases, a circumstance which very fortunately took place on the first attempt to break up the heaths and warrens in the northwestern part of the county. . . . In general it may be held for sound doctrine in Norfolk, that an estate can neither be improved, nor even held to its former state of improvement, without long leases."² This view was held, also, by that most competent

¹ Brown, "Agricultural Survey of West Riding of Yorkshire," p. 30; also, Arthur Young, "Survey of Norfolk," p. 47.

² "Survey," p. 47.

agricultural writer of the time, William Marshall,¹ who wrote as follows on this same subject, in 1795: "Marling is the principal improvement of a Norfolk farm, but who would marl on a seven years' lease? Where much marling is to be done, fourteen years is too short a term."

In some places, it is true, the old and simple system of holding land from year to year was thought to be entirely satisfactory. It was reported that great estates were let in full confidence without leases in the East Riding of Yorkshire, "where a lease was never asked for, probably never wished for," because the tenants were "equally secure" when holding their farms from year to year.² In Staffordshire the conditions were much the same.³ In Derbyshire, the Duke of Devonshire granted no leases, "but owing to his fair treatment of tenants" improvements were carried on extensively; but the other landlords of the county were not able to inspire such confidence.⁴ Arthur Young, who was the champion of long leases, laid down the general rule, that upon rich soils where no improvements are necessary, "the want of leases cannot be material; but where liming, marling, draining, fencing, etc., are demanded, the want of a lease will often be the want of the improvements."⁵

But while "tenancy at will" or "from year to year" was quite satisfactory where no improvements were to be made, or where the landlords were able to win the confidence of their tenants, the surveyors reported quite generally that the security of long leases was necessary to induce the farmers to carry on the needed improvements. In remarking upon the lack of security to the investments of tenants in England, at that time, James Anderson says "an unprejudiced person, who should attentively consider the whole system of conduct pursued by landed proprietors, and the ideas that in general prevail in this respect, would believe that agriculture was an employment which it was deemed to be a good policy to repress above all others."⁶

¹ "Rural Economy of Norfolk," Vol. I, p. 68.

² *Ibid.*, p. 31.

³ *Ibid.*, "Lincolnshire," pp. 57-60.

⁴ "Survey," p. 72.

⁵ *Ibid.*, p. 35.

⁶ "Agriculture," Vol. III, p. 92.

John Tuke, who for many reasons favored the letting of land from year to year, says in his report on the North Riding of Yorkshire: "Experience, nevertheless, teaches us, that under some landlords, especially those in straitened circumstances, . . . or where considerable improvements are to be made at the expense of the tenants, it is more advisable to be under greater certainty, though attended with greater rent."¹ The desirability of increasing the number of twenty-one-year leases in the West Riding of Yorkshire was stated very forcibly by Robert Brown, who believed that without long-term leases improvements could not be made.² In Derbyshire improvements were thought to be much retarded because the tenants lacked the security of long-term leases.³ In Lincolnshire, where leases for a term of years were very rare, it was generally believed that, while improvements had been carried forward fairly well, long-term leases would result in much greater improvement.⁴ In Leicestershire, the yeomen farmers were improving their lands, but the tenant farmers were slow to make improvements owing to the lack of long-term leases. It was said that while in many cases the present landlords could be trusted by the farmers, the estates might change hands at any time and that a new lord usually meant a different ordering of affairs. The phrase, "New lords, new laws," was current in Leicestershire.⁵ In 1784 William Marshall was of the opinion that, in the midland counties, it was of little importance whether land was held under a lease for a term of years, or from year to year, — such was the confidence of the tenantry in the landlords. An instance is given of a young man who held a large farm from year to year, and who proceeded to improve the land in various ways. Five years later the following note was added to the earlier statement: "Unfortunately for the tenant, in this instance, his farm is now on sale, and the very expensive improvements which he has been making, are, probably, in a great measure sunk."⁶

¹ "Survey," p. 55.

² *Ibid.*, p. 30.

³ *Ibid.*, Vol. III, p. 638.

⁴ *Ibid.*, p. 57.

⁵ *Ibid.*, p. 341.

⁶ "Rural Economy of the Midland Counties," Vol. II, p. 52.

It was thought that farmers would be more enterprising in Shropshire, if more leases were granted.¹ In Worcestershire, it was believed, both by the landlords and by the tenants, that, where improvements were to be made, a lease for a term of years was necessary. John Friest, the author of the "Buckinghamshire Survey," made a plea for long leases, especially where improvements were to be made. In Cambridgeshire, where most of the farms were held on yearly tenures, the lack of certainty of tenure was much felt. In general the tendency was for the tenant farmers who held their farms from year to year, to adhere to the old customs and to attempt no new improvements; for the saying:

He that havocs may sit,
He that improves must flit,

expressed a common belief among the tenant farmers of that day who held their land from year to year. The farmers and the rural economists of the time were quite generally agreed that the adoption of long-term leases throughout the land was essential to the introduction of the desired improvements in agriculture.

The long-term lease of one hundred years ago reached its highest degree of perfection in the county of Norfolk. The two main objects to be secured by the covenants of the lease were: first, to guarantee to the tenant the continued possession of the farm for a period sufficiently long to encourage investments in improvements, especially such improvements as are made in and upon the soil by careful tilth and by the addition of artificial fertilizers; and second, to secure the landlord against improper use of the property during the last few years of the tenancy so that the farm would be returned to the landlord in good condition. "No department of the management of an estate gives more uneasiness to both landlord and tenant," says Marshall, "than do *removals*, or exchanges of tenants; and every covenant which facilitates this unpleasant business is valuable."²

¹ "Survey," p. 137.

² "Rural Economy of Norfolk," second edition, Vol. I, p. 69.

In the Norfolk leases the greater number of the covenants which restrict the farmer in his operations pertain to the last three years of the tenancy. This was true to a greater or less extent in the other counties where long-term leases were in use. This method of laying down restrictions seems to have been based on the belief that the interest of the tenant would lead him to farm in accordance with the rules of good husbandry until the last few years of the tenancy, at which time he could increase his own profits by exhausting the soil and leaving the farm in bad condition for the incoming tenant.

We wish to call especial attention to a covenant given by Marshall as found in the Norfolk leases, which forbids the taking of more than two grain crops without a whole year's fallow, a crop of turnips, or "a two years' lay." Writing nine years later than Marshall (1804), Arthur Young gives the following clause among "new covenants" in use in the county of Norfolk. The tenant "shall not sow any of the lands with two successive crops of corn, grain, pulse, rape or turnips for seed,"¹ without the consent of the landlord. The rule that two grain crops should not be grown in succession on the same piece of land became an established custom in most of the grain-growing districts of England. This rule was in harmony with the Norfolk four-course system of crop rotation. In this four-course system, a fallow crop, that is a cultivated crop, usually a root crop, is followed by a crop of spring grain with which clover or grass seeds are sown. After harvesting the hay the next season, the field is plowed and put into condition for fall grain which is the fourth crop in the course. For more than a century this system has been the most highly approved of all systems of crop rotation in use in England. This same system was introduced into Germany by Albrecht Thaer.

A study of the leases in use in the various counties of England at the close of the eighteenth century does not give so favorable an impression as do the descriptions of the Norfolk system. The limitations and restrictions as to the crops which could be grown, and as to the system of crop rotation, were often of

¹ "Agriculture of Norfolk," p. 50.

such a character as to make them injurious to the interests of the farmers. These regulations were likely to be of such a character as would make it impossible for the farmers to adjust their farming to the demands of the times. In the Vale of Gloucester, for example, where nearly all of the land was as yet in the common fields, the tenants were required "to fallow the arable land, every third or fourth year; according to the established course of husbandry of the township." And again, "not to sow hemp, flax, or rape seed on any part of the premises. Nor, otherwise, to cross-crop; but to sow the same corn and grain, from year to year, according to the best and most usual course of husbandry used in the respective townships."¹

In writing on the subject of the restricting clauses, generally found in the leases of his time, Robert Brown says: "The restrictions imposed during the time he occupies his farm, prevent the farmer from changing his management, or of adapting his crops to the nature of the soil he possesses. Agriculture is a living science which is progressively improving, consequently what may be esteemed a good course of cropping at one time, may, from experience and observation, be afterwards found defective and erroneous. That particular covenants in a lease are obstacles to improvements cannot be disputed; for the very nature of a covenant supposes that the practice to be regulated by it had arrived at its *ne plus ultra*, and could not be mended. These covenants or restrictions subsist more or less in every lease we heard of; and the shorter the lease the more numerous they are. . . . General rules of management are very proper in leases, such as, to keep the farm in good order, to consume all the straw raised upon it, and to sell no dung. These restrictions we will allow; and every good farmer will follow them whether he is bound to do so or not. Nay, we will go farther — if leases of a proper duration were granted, it is very reasonable that the property of the landlord should be protected by restricting clauses for the three years previous to their expiration. But after all, it will be found that no clause can be inserted, besides the general ones already mentioned, that will serve to

¹ W. Marshall, "Rural Economy of Gloucestershire," Vol. I, p. 25.

enhance the value of the land, except obliging the farmer to leave a proportional quantity of such land in grass at the expiration of the lease, and specifying the manner in which that land is to be sown down. Other clauses serve only to distress the farmer, but will never promote the interests of the land-lord."¹

The agricultural writers of the time were by no means all in full agreement with Robert Brown in his views on the subject of leases. Leases seem to have been in best repute in the eastern counties, where they were usually for a term of twenty-one years. Mr. Bailey is quoted as saying, in criticism of Mr. Brown's position as stated above, that, "if the proprietors of land were sure of always getting tenants that would act properly there would be no need of restricting covenants; but this is not always the case, and there are many instances of estates being much injured by exhausting crops where tenants were not properly restricted. That many covenants are useless or hurtful I readily admit; but covenants may be so framed, that a tenant shall have ample liberty to take such crops as he shall think proper, and to propose such modes as shall benefit himself without injuring his landlord."²

It was quite generally agreed that long leases, properly drawn, were extremely desirable from the standpoint of the farmer, wherever improvements were to be made. But the landlords were not so generally of the opinion that long-term leases were a good thing. Many landlords claimed that it made the tenants too independent.³ But a more important objection was found in the fact that while a lease of sufficient length would enable the tenant to make improvements, it was hard to arrange matters so that the tenants would not exhaust the land at the end of the tenancy. It often happened that a tenant would bring the land into good tilth and to a high degree of fertility during the early years of his tenancy, and then take as nearly everything out of it as possible during the last few years of the lease.

¹ "Agricultural Survey, W. R. Yorkshire," pp. 42-44.

² *Ibid.*, p. 50.

³ "Staffordshire Survey," p. 30; "Leicestershire Survey," pp. 51-52; "Northamptonshire Survey," p. 45.

Another objection to the granting of leases for long terms became quite general between 1790 and 1815. The landlords objected that as a result of rising prices during the period covered by the leases, they sustained great losses. It was maintained by the landlords of Surrey, for example, that by letting land for a term of fourteen or twenty-one years or any longer period, the owners of the land actually received, "almost every year during the currency of the lease, and certainly in the latter years of it, a less rent than he did at the commencement, from the depreciation in the value of money."¹ And for this reason the landlords were objecting to the granting of leases. Even in the county of Norfolk, where the twenty-one-year lease had proved so beneficial, the landlords objected to long leases because it so often happened that soon after a farm was rented the prices of agricultural produce would rise so much higher than when the lease was taken, that the tenants were "under-rented" for a series of years.² The basis for complaint on this ground is shown by the fact that the average price of wheat was about twice as high for the five years from 1809 to 1813 as for the five years from 1790 to 1794.³

A statement of the tenant problem and the solution proposed by an eminent rural economist of the time will be interesting in this connection. In his work on "Landed Estates," published in 1806, William Marshall reviews the existing forms of land tenure,⁴ "the tenant holding *at will*"; "holding from *year to year*, under a written agreement, with specified covenants"; "leases for a term of years, as seven, fourteen, twenty-one, or greater number of years"; and says:

"Objections are urged against each of these species of tenancy. The depreciation of the circulating value of money, and the consequent nominal rise, in the rental value of lands, has rendered long leases greatly disadvantageous to proprietors: while annual holdings are not only discouraging to tenants;—especially to men of exertion and capital—but are a bar to the improvement, and a clog on the

¹ W. Stevenson, "Agriculture of Surrey," p. 98.

² Marshall, "Rural Economy of Norfolk," Vol. I, p. 67.

³ Prothero, "English Agriculture," Appendix I.

⁴ Pp. 378 to 382.

prosperity of an estate: beside being, in the first instance, unfriendly to the interests of proprietors; inasmuch as they lower the fair rental values of their lands.

"Some years ago, on perceiving the antipathy which had gone forth among men of fortune, against granting leases for long terms, and being well aware of the disadvantages of annual holdings, it occurred to me that agreements for occupying from *three years to three years*, instead of from year to year, would be an eligible species of tenancy: or, which is the same thing, granting leases for six years certain; with a condition that if neither party give notice to quit, before the expiration of the first three years, then the term to be prolonged to nine years; and so on, from three years to three years . . . until three years after notice has been duly given, by either party to the other.

"This gives room for a tenant 'to turn his hand in,' and a loose to his exertions. He has, in reality, a fresh lease of six years granted him, every third year. This is sufficient to encourage him to keep his lands, continually, in a husbandlike state. And if he execute, at his own expense, any of the higher improvements, such as [improving waste lands, etc.] it is but reasonable that he should have, whenever he may quit his farm, an equitable remuneration for the *remainder* of such improvements. Thus, the tenant is placed on sure ground. He may till, manure, and improve, with much the same confidence, as if the lands in his occupation were his own property.

"In return for such advantages, the tenant cannot refuse to covenant, that, during the last three years of his term, he will manage his farm in a husbandlike manner, and, at the end of the term, will leave it in such a state of cultivation and repair, as will induce a good tenant to take it, at a full rent; or suffer the proprietor to put it in such a state, at his (the outgoing tenant's) expense.

"An estate which is under lease, on these principles, and under attentive management, cannot be let down to an unprofitable state. It must continually remain under a regular course of husbandry, and in a state of cultivation and repair. If the acting manager do his duty, even the changing of tenants cannot interrupt its prosperity. The incoming tenant (under attentive management) steps into his farm, with the advantages that he would have enjoyed, had it been under his own direction for the three preceding years.

"But, with a lease on this principle, and with a proper choice of tenants, removals can rarely happen. What superintendent, who

knows the difficulty of procuring a good tenant, would wish to discharge him? And no such tenant will readily leave the farm he is settled upon, if he find proper treatment. Even should notice be given, in consequence of any misunderstanding between the parties, three years allow time for reflection; and, before they expire, resentment may die away, and cordiality be restored. If, however, either party remain dissatisfied, he has an easy way of dissolving the connection. Or if a proprietor or a superintendent is desirous to make fresh arrangements on an estate; or to regulate its rent roll, by the existing value of money; he need not wait many years to fulfill his desire. For if the tenant in occupancy will not agree to pay a fair rent, he has three years before him to choose one who will; another valuable advantage of the tenancy proposed.

"Thus, a lease on this principle has a decided preference by a proprietor, to long leases. And its advantage over annual holdings is not less considerable. The lands of an estate are well worth from 5 to 10 per cent more, to a tenant, under the former, than under the latter, tenancy. So that, besides the conveniences mentioned, a proprietor may be immediately adding very considerably to his income, by this principle of management.

"This species of tenancy I have had the happiness of being the means of introducing, upon some considerable estates, in England, in Wales, and in Scotland; with, I believe, the mutual satisfaction of the men of fortune who possess them, and of their tenants."

While this system proposed by Marshall might solve the problem of adjusting the amount of rent to changes in real rental values, and while it might encourage the tenant to make such improvements as he could realize upon in three years, it lays down no scheme for determining the value of unexhausted improvements, and, indeed, does not even propose that a tenant shall have remuneration for the investments made upon the land during the last three years, and on which, if he farms in a husbandmanlike manner, he cannot realize all of the benefit. Thus it seems that Marshall failed to solve the most permanent difficulty which the tenant problem presented; for the unsettled condition of the money market became less important in the course of time, while the problem of unexhausted improvements has been of increasing importance as the years have gone by.

Various methods were devised, in different parts of England, for keeping the tenants from leaving the land in an exhausted condition at the termination of their leases. It was the custom on one estate in Shropshire to lease the land for twenty-one years "certain," and for seven years more at the option of the landlord. At the end of the twenty-one-year period, a new contract of the same kind might be entered into, if terms could be agreed upon, or the tenancy might be brought to a close, but the important condition was that if the tenant had reduced the land to a very low degree of fertility he could be forced to keep the farm for seven years longer at the old rent. Even if this system had succeeded in protecting the landlord, it failed even to recognize the right of the tenant to unexhausted improvements.

The system which subsequent history has shown to be the most effective means of keeping the farmers from exhausting the land during the last few years of the tenancy, is that reported in the "Yorkshire Survey." The system was that of granting remuneration to the retiring tenant for all his investments on which time had not yet allowed him to realize their full returns; the tenant was then left free to farm as he pleased so long as he conformed to the rules of good husbandry. One of the examples of this system is as follows :

"The landlord covenants to allow the tenant, on quitting his farm, what two indifferent persons shall deem reasonable, for what is generally called full tillage and half tillage, being for the rent and assessment of his fallow ground, the plowing and the management of the same; the lime, manure, or other tillage laid thereon; the seed sown thereupon; the sowing and harrowing thereof; also for the sowing, harrowing, manuring, and managing any turnip fallow which he may leave unsown; also for any clover seed sown on the premises; and harrowing and rolling in of such seed; and for every other matter and thing done and performed in a husbandrylike manner on such fallow lands, in the two last years of the term; also for the last year's manure left upon the premises; and for any manure and tillage laid upon the grass land."¹

¹ "W. R. Yorkshire," p. 40.

During the period of rising prices prior to 1812, the farmers were anxious to rent land on long leases. It is said that at that time, "good tenants always wanted leases," that "they were galloping after one another to take leases at any rent."¹ After the close of the Napoleonic wars, prices fell back almost to their old level. The average price of wheat was just about half as high for the five years from 1821 to 1825, as for the five years from 1809 to 1813. With this fall in prices the farmers became even more averse to the taking of long leases than the landlords had previously been. One after another the witnesses before the Parliamentary Committee on Agriculture, in 1833, bore testimony to the fact that the farmers were objecting seriously to taking long leases, because they did not know how soon they might be unable to pay the rent, as their capacity to pay the rent depended upon such uncertain prices. The farmers were in doubt as to how much protection they were to have from the competition of foreign producers. But without regard to this, they knew that the prices of agricultural products had been falling for several years in succession, and they were unable to tell when the limit would be reached.

With depressed prices the landlords found new reasons for objecting to long leases. This was the time, one might think, for the landlords to regain what they had lost during the period of rising prices, but they found it rarely happened that the tenants were able to stand the losses incurred by falling prices. The farmer could not be forced to live up to his contract, if he was losing money. It was said that leases were binding upon the landlords but not upon the tenants. The fall in prices seemed to demoralize the farmers, so that the landlord was never certain that his tenant would not disregard the contract in case of a fall in prices, whereas the tenant would certainly remain to reap the benefits in case of a rise in prices.

The remedy which was often prescribed for the evils of fluctuating prices was the introduction of "corn rents."² By this it is not meant that the farmer was to give a certain

¹ *Parliamentary Papers*, 1833, Vol. V, questions 7420 and 8462.

² *Ibid.*, 1833, Vol. V, questions 2594-2596; 2601-2609.

share of his crop to the landlord as rent, but that he should pay as rent the value of a certain fixed amount of grain. The rent was figured on the basis of what was called in Scotland the "fiars prices of the county." In Scotland the sheriff of each county was bound to summon a jury once each year to examine on oath a number of witnesses, such as farmers, grain dealers, brewers, etc., and according to the evidence thus obtained, to fix the "fiars prices" of the different grades of grain. This system was quite generally resorted to in Scotland during the period of falling prices. Corn rents were advocated by the English rural economists of the time, and were introduced with success in a few instances in the western counties; but this system failed to gain general favor among the farmers and landlords of England.¹

The use of long leases declined rapidly in England during the period following the close of the continental wars. In those counties where they had been most numerous and most beneficial, the farmers came to prefer short leases or even tenancy from year to year. The long lease as a means of solving the tenant problem had been "weighed in the balance and found wanting." Yet it must be admitted that long leases had done a great deal of good in promoting improvements in English agriculture and now that the prices of agricultural products were depressed the farmers did not find it profitable to farm their lands so intensively as formerly even if they had long-term leases. Thus, the tenant problem was of less importance in the minds of the farmers for a series of years, until the return of prosperity again raised the question of investments in improvements and the means of securing just returns upon such investments.

The period from 1836 to 1875 was one of general prosperity for English farmers, and by 1850 the tenant problem was receiving the attention of Parliament. The use of long leases had gradually declined during the first half of the nineteenth century, and while there were agricultural economists who still advocated this means of securing to the farmers legitimate returns upon

¹ *Parliamentary Papers*, Vol. V, questions 328 to 331; 347; 10438; 10448; 10454; 10591-10595.

their investments, there was a very prevalent dislike to long leases on the part of both parties concerned. Yet it was generally recognized that security to the tenant's investments was essential to the promotion of that degree of intensity of culture which was most profitable in the long run both to the tenant and to the landlord.¹

The long-period lease had proved so unsatisfactory that especial attention was now given to the perfecting of the "year to year" agreement. The custom of "tenant-right," which had proved satisfactory in Lincolnshire, formed the basis for the hope that tenants holding their farms from year to year might be given that degree of security which would promote good agriculture.

The introduction of agricultural improvements came rather later in Lincolnshire than in many other parts of England, but when the transition did come it was "rapid and striking, perhaps more so than in any other county in England."² These improvements were made, too, without the protection of long-time leases. They were made under the protection of the Lincolnshire system of tenant-right. "It was very fortunate," says Caird, "that when the time [for the introduction of agricultural improvements] arrived, the leading landlords [of Lincolnshire] were liberal and intelligent men. . . . They saw the advantage of encouraging tenants to embark their capital freely; and as leases were not the fashion of the county, they gave them that security for their invested capital, which is termed 'tenant-right,' or compensation for unexhausted improvements. Though this tenant-right may not be a strictly legal claim, it is universally admitted in Lincolnshire, the landlord paying it when a farm falls into his own hands, and refusing to accept a tenant who declines to comply with the custom. It varies, however, considerably in the different parts of the county,

¹ To avoid the necessity of making specific references in great numbers it will simply be stated that the discussion of this period is based upon a Parliamentary Report on Agricultural Customs, *Parliamentary Papers*, 1847-1848, Vol. VII; and Caird's "English Agriculture" in 1850 and 1851. In these sources the material here used is indexed under "tenant-right."

² Caird, "English Agriculture," p. 194.

and appears to have enlarged in its obligations with the greater development of agricultural improvements. In North Lincolnshire, the usual allowances claimed by the outgoing from the incoming tenant, include draining, marling, chalking, claying, lime, bone, guano, rape dust, and oil-cake. The following is the scale on which these allowances are usually made :

“ ‘ When the landlord has found tiles, and the tenant has done the labor, if done within twelve months before the end of the tenancy and no crop has been taken from land after the draining thereof is completed, the whole cost is allowed. If one crop has been taken from such land, three fourths of the cost are allowed, and so on, diminishing the allowance by one fourth for each crop taken ; but this allowance is made only when the work is well and properly done by the tenant, to the satisfaction of the landlord or his agent, expressed in writing. For marling or chalking, if done within twelve months before the end of the tenancy, the whole cost is allowed ; for that done in the previous year, seven eighths of the cost are allowed ; and so on, diminishing the allowance by one eighth for each year that shall have elapsed since the marling or chalking. — For lime used within twelve months before the end of the tenancy, if no crop has been taken from the land limed in that year, the whole cost, including labor, is allowed ; if one crop has been taken from such land, four fifths of the cost are allowed ; and so on, diminishing the allowance by one fifth for each crop taken from such land. — For claying on light land, a similar allowance to that for lime. — For bones used within twelve months before the end of the tenancy two thirds of the cost are allowed, and for those used in the previous year one third of the cost. — For guano and rape dust used within twelve months before the end of the tenancy for turnips or other green crop, two thirds of the cost are allowed. — For oil-cake given to cattle and sheep one third of the cost price of that so used within twelve months before the end of the tenancy, and one sixth of the cost price of that so used in the previous year is allowed.’ ”

“ The amount of these allowances is settled by arbitration. . . . On the whole, . . . the system is believed to have worked well.”¹

The custom of tenant-right was fully recognized in the counties of Sussex, Surrey, and Lincoln, in the Weald of Kent,

¹ Caird's "English Agriculture in 1850 and 1851," pp. 194-195.

in the northern part of Nottinghamshire, and in the West Riding of Yorkshire. In some of these regions the system was not giving very good results. In Surrey, the custom of tenant-right was said to be "promoting an extensive system of fraud and falsehood among the farmers." The custom seems to have been quite loosely formulated in that country, and it was possible for the farmers to "work up a quitting," as it was called,¹ and thus defraud the landlord or the succeeding tenant. Not being properly regulated the "compensation" often embraced "large payments for imaginary improvements and alleged operations, which, even if they had ever been performed would be more injurious than beneficial."²

But while the custom of tenant-right was very imperfect in its operations in some parts of England, the principle on which it was based was sound, and in time it was to be embodied in the laws of the land. The custom of tenant-right struck at the very heart of the tenant problem. It guaranteed to the tenant just returns for his investments, without involving the many disadvantages of the long-period lease. The experience of the landlords and tenants of Lincolnshire had already proved that where the system was properly regulated the custom of tenant-right was satisfactory in practice as well as sound in principle.

In 1850 a bill was introduced in Parliament which aimed at the embodiment of this custom of tenant-right into a law. It was entitled "A Bill for the Improvement of the Relation between Landlord and Tenant in England and Wales." Its purpose, as stated in the preamble, was to insure to farmers compensation for properly constructed, permanent improvements. The idea of enacting a law of this kind was not new in 1850. Two hundred years before, Walter Blith advised that a law be enacted "whereby every landlord should be obliged . . . to give him [the tenant] reasonable allowance for his clear improvements." The bill of 1850 did not pass, but neither did it die. Again and again similar bills were brought before Parliament, and in 1875 an act was passed, which laid down the conditions for compensating the outgoing tenant, but unfor-

¹ Caird's "English Agriculture in 1850 and 1851, p. 119.

² *Ibid.*, p. 119.

unately no provision was then made to keep the landlords from requiring the tenants to contract themselves out of the right to claim compensation under the law, and while the law was beneficial in that it systematized and brought greater uniformity into the practice of granting compensation where tenant-right was recognized, it was not generally adopted. Even the author of the bill asked his tenants to contract themselves out of the benefits of the law which he himself had framed.

In 1883 a new bill, the Agricultural Holdings Act, was passed. This Act contained a clause making it illegal for a landlord to contract himself out of the conditions of the law. The law of 1883, with the slight modifications of the Acts of 1900, 1906, 1908, 1913, and 1914, is still in force, and it will be worth while to examine it with considerable care. The law enables the tenant farmers to obtain from the landlords as compensation for improvements at the termination of their tenancies, "such sum as fairly represents the value of the improvement to an incoming tenant."

The improvements for which compensation could be claimed under this law were divided into three classes. The first class includes all those improvements to which the consent of the landlord is required if the payment of compensation is to be enforced by law. This class includes the following list of improvements:

- (1) Erection, alteration, or enlargement of buildings.
- (2) Formation of silos.
- (3) Laying down of permanent pasture.
- (4) Making and planting of osier beds.
- (5) Making of water meadows or works of irrigation.
- (6) Making of gardens.
- (7) Making or improving of roads or bridges.
- (8) Making or improving of watercourses, ponds, wells, or reservoirs, or of works for the application of water power or for supply of water for agricultural or domestic purposes.
- (9) Making or removal of permanent fences.
- (10) Planting of hops.
- (11) Planting of orchards, or fruit bushes.
- (12) Protecting young fruit trees.
- (13) Reclaiming of waste land.

- (14) Warping or weiring of land.
- (15) Embankments and sluices against floods.
- (16) The erection of wirework in hop gardens.

[NOTE. — The above are subject to the provisions given under the third class of improvements with respect to market gardens.]

The drainage of land is put into a class by itself. It is required that the tenant shall *give notice* to the landlord of his intention to construct a drainage system if he is to expect compensation under the law for his improvement. This notice must be given not more than three months nor less than two months before the beginning of the execution of the work, and during this time the landlord may, if the tenant has not in the meantime withdrawn the notice, "undertake to execute the improvement himself, and may execute the same in any reasonable and proper manner which he thinks fit, and charge the tenant with a sum not exceeding five pounds per centum per annum on the outlay incurred in executing the improvement, or not exceeding such annual sum payable for a period of twenty-five years as will repay such outlay in the said period, with interest at the rate of three per centum per annum, such annual sum to be recoverable as rent. In default of any such . . . undertaking, and also in the event of the landlord failing to comply with his undertaking within a reasonable time, the tenant may execute the improvement himself, and shall in respect thereof be entitled to compensation" under the Agricultural Holdings Act.

The third class includes a large number of improvements for which compensation can be claimed under the law, without having gained the consent of the landlord or having given notice to him previous to the execution of such improvements. The list of improvements put into this class is as follows :

- (18) Chalking land.
- (19) Clay burning.
- (20) Claying of land, or spreading blaes upon land.
- (21) Liming of land.
- (22) Marling of land.
- (23) Application to land of purchased artificial or other purchased manure.

(24) Consumption on the holding by cattle, sheep, or pigs, or by horses other than those regularly employed on the holding, of corn, cake, or other feeding stuff not produced upon the holding.

(25) Consumption on the holding by cattle, sheep, or pigs, or by horses other than those regularly employed on the holding, of corn proved by satisfactory evidence to have been produced and consumed on the holding.

(26) Laying down temporary pasture with clover, grass, lucerne, sainfoin, or other seeds sown more than two years prior to the determination of the tenancy.

(27) Repairs to buildings, being buildings necessary for the proper cultivation or working of the holding, other than repair which the tenant is himself under an obligation to execute. This, however, requires notice to landlord.

In ascertaining the amount of compensation payable to a tenant, account is taken of any benefit which the landlord has given or allowed to the tenant for making the improvement. Also in case the tenant is under contract to return a certain amount of manure to the soil each year, and in case such amount shall not exceed the amount that is produced from the feeds which are produced upon the holding, this amount is excluded from the amount for which compensation can be claimed.

In case the landlord and the tenant fail to agree as to the amount of compensation which the tenant should have for the various improvements which have been named above, the difference is settled by means of arbitration.

In case of any breach of contract on the part of either landlord or tenant, damages may be claimed by the party injured. Also in case the tenant causes or allows any waste, injures the soil, or destroys the improvements, the landlord can make a claim for payment for such injuries. These claims are arbitrated the same as those for improvements.

In case of permanent improvements such as are not mentioned in either of the above classes, the tenant may remove the improvement unless the landlord may choose to buy the same, with the proviso that he repair any damages which may have been incurred by the removal of the building, that is, he must

leave the premises in as good condition as if the improvement had not been made.

It is the usual thing for the incoming tenant to pay the sum which is due the outgoing tenant as remuneration for improvements; and in case the new tenant remains but a short time on the farm, so that at the expiration of his tenancy he has not had time to realize in full upon such investments, he receives remuneration for such improvements just the same as if he had executed them himself.

These are the essential points of the Agricultural Holdings Act of 1883 as modified by the later Acts. In 1908 two important additions were made to the law, the one relating to *damages to crops from game*, and *compensation for unreasonable disturbance*. The first specifies that damage to crops from game which the tenant has no right to take shall be compensated for by the landlord if the damage amounts to more than one shilling per acre of the area over which the damage extends. In order to receive compensation the tenant must give notice in writing to the landlord as soon as may be after the damage was first observed by the tenant and a reasonable opportunity given the landlord to inspect the damage.

The second provides for compensation for unreasonable disturbance of the tenant who is removed by the landlord without good and sufficient cause or who finds it necessary to move because of demands for increased rents, demanded by reason of an increase in the value of the holding due to improvements which have been executed by or at the cost of the tenant, and for which he has not, either directly or indirectly, received an equivalent from the landlord. The tenant may claim compensation for the loss or expense directly attributable to his quitting the holding which he may unavoidably incur upon or in connection with the sale or removal of his household goods, or his implements of husbandry, produce, or farm stock on or used in connection with the holding.

The law, as it now stands, seems to supply the regulations necessary to an amicable adjustment of the relations between landlord and tenant in England.

Tenancy from year to year is the rule in England to-day, and no question is raised as to the security of the landlord or of the tenant. Either party may bring the tenancy to a close at the expiration of any year, by giving proper notice. Under the act, twelve months' notice is required, but by special agreement between landlord and tenant the time may be changed to six months.¹

Written contracts are generally used, but the leading agriculturists of the country agree that such contracts should contain few restrictions upon the methods of farming, except that the farm shall be operated in accordance with the rules of good husbandry. Many of the written agreements now in use would, if strictly enforced, bind the tenants hand and foot; but as a matter of fact many of these covenants are recognized to be obsolete and others are "winked at" by the landlords. A study of the written agreements nominally in force at the present time would, in themselves, give a very erroneous idea of the actual relations between landlords and tenants.

The farmers and the landlords of England have quite generally come to recognize that liberty and honesty are essential to success in agriculture. The writer gradually gained the impression by coming in personal contact with farmers and landlords, or more often the agents of the latter, that accompanying the gradual perfecting of the Agricultural Holdings Act, there has been the growth of a sense of justice in the minds of both the landlords and the tenants. This sense of justice is all the more effective because it is accompanied by the belief that in farm management, whatever is beneficial to the farmer is likewise advantageous to the landlord.

The English method of regulating the relations between landlord and tenant is successful throughout Great Britain. The history of land tenure in Scotland would prove very interesting and helpful. Leases of long duration, most commonly for nineteen or for twenty-one years, have been in general use

¹ The Agricultural Holdings Act as now in force may be found in convenient form in the *Journal of the Royal Agricultural Society of England*, third series, Vol. XI, Part III, 1900.

in Scotland for more than a century. The system of "corn rents," already referred to, proved an effective means of adjusting rents to prices at the time when this problem was proving disastrous to the long-term lease in England. At the present time the Agricultural Holdings Act of Scotland is practically the same as that in force in England. While it continues to be the custom among Scottish landlords and tenants to have long-term leases drawn, it has become the common thing to include a clause which makes it possible for either the landlord or the tenant to bring the tenancy to a close at certain periods, as for example, at the end of the fifth, tenth, or fifteenth year, or at the end of the second, fourth, sixth, etc., year, by giving proper notice to the other party. In effect, therefore, the long-term lease is passing away, for the same object is now attained through the Agricultural Holdings Act.

In another connection the writer had occasion to publish the statement that, "the relation between landlord and tenant is very satisfactorily arranged, the farmers are, as a rule, contented with the present system, and the fields of England prove that landownership on the part of farmers is not essential to good agriculture." This statement has occasioned surprise on the part of some American readers, but an eminent agriculturist of Great Britain, Mr. John Speir, says this statement "expresses briefly and concisely the position here." The writer had no thought of minimizing the importance of landownership on the part of farmers, but rather to emphasize that in spite of the fact that tenancy is the rule in that country, the agriculture of England is, in many ways, worthy of our emulation, and that this advanced position of English agriculture is due, in a great measure, to an excellent system of adjusting the relations between landlord and tenant.

That Americans may profit by the experience of their British cousins should be evident from the foregoing pages. That they will be willing to draw upon the experience of the English will scarcely be questioned. The Americans have become independent in thought and action, and have become leaders in nearly every line to which they have turned their attention,

yet they have always been willing to accept all that is of value in the achievements of other countries, and we believe that as America has profited by the experience of the English in the development of factory legislation, so will she profit by a study of the English agrarian legislation.¹

COVENANTS FOUND IN NORFOLK FARM LEASES, BY W. MARSHALL

[The following description of the Norfolk leases is taken from the second edition of William Marshall's "Rural Economy of Norfolk" (1795), pp. 70 to 80.]

The following *heads of a lease* will place the general management of a Norfolk estate in a clear and comprehensive point of view. They are not, either in form or substance, copied, precisely, from the lease in use upon any particular estate; but exhibit, I believe, a pretty faithful outline of the modern Norfolk lease.

Landlord agrees, 1. To let certain specified premises, for a term and at a rent, previously agreed upon.

2. Also to put the buildings, gates, and fences in tenantable repair.

3. Also to furnish rough materials, and pay half the workmen's wages in keeping them in repair, during the term of the demise; willful or negligent damage excepted.

4. Also to furnish the premises with such ladders as may be wanted in doing repairs, or in preserving the buildings, in case of high winds, fire in chimneys, etc. (an excellent clause).

5. Also to furnish rough materials for keeping the gates, gate-posts, stiles, etc., etc., in repair; or to furnish the materials ready cut out; tenant paying the usual price of labor for cutting out.

6. Also to pay half the expense of such shores and ditches as he, or his agent, shall direct to be made or renewed.

Landlord reserves, 1. All minerals, fossils, marls, clays; with liberty to work mines, quarries, and pits, and to burn lime and bricks upon the premises; likewise to carry away such minerals, etc., etc.; excepting such marl, or clay, as may be wanted for the improvement of the farm.

2. Also, all timber trees, and other trees and woods, underwood and hedgewood; with liberty to fell, convert, char, and carry off such timber or other woods; excepting such thorns and bushes as shall be set out by landlord, for making and repairing fences; pro-

¹ The Agricultural Holdings Acts, 1908-1914, by T. C. Jackson.

vided the thorns, etc., so set out be cut in the winter months; excepting, however, out of this proviso, such few as may be wanted in the course of the summer months, for stopping accidental gaps.

3. Also, full liberty of planting timber trees in hedges, or on hedgebanks; with a power to take to himself, after twelve months' notice given, some certain number of acres of land for the purpose of raising timber trees, other trees, or underwood; allowing the tenant such yearly rent, etc., for the land so taken, as two arbitrators shall fix.

4. Also, a power of altering roads, and of inclosing commons, or waste lands, without the control of the tenant; to which intent, all common-right is usually reserved, *in form*, though seldom *in effect*, to the landlord.

5. Also, the customary liberty to view the buildings, do repairs, and, consequently, to bring and lay materials.

6. Lastly, the right of sporting and destroying vermin.

Tenant agrees, 1. To pay the stipulated rent half-yearly; and within thirty days after it be due; under forfeiture of the lease; and further, to pay the last half-year's rent two months, or a longer time, before the expiration of the term.

2. Also, to do all carriage for repairs (within a specified distance); and to find all ironwork and nails; and to furnish wheat-straw for thatching; and to pay half the workmen's wages, and find them with small beer.

3. Also, to do all ditching, etc., set out by landlord (provided the quantity set out do not exceed one tenth of the whole); and to pay half the workmen's wages, and find them in small beer; and to defend with hurdles, or otherwise, all such young hedges as shall be exposed, in spring and summer, to the browsings of pasturing stock.

4. Also, to make, or pay for making, such gates, etc., as shall be wanted upon the farm during the term of the demise; and to hew, or to pay for hewing, all necessary gateposts; and to put down and hang, in a workmanlike manner, such gates and gateposts at his own sole expense; as well as keep all the old gates on the premises in tenantable repair.

5. Also, not to assign over, nor in any other way, part with possession of his farm; but to make it his constant residence during the term of the lease. Nor to take any other farm; nor to purchase any lands adjoining, or intermixed with it; without the license and consent of landlord; under forfeiture of the lease.

6. Also, not to break up any meadow, pasture, or furze ground, under the penalty of ten pounds an acre a year. Nor to cut "flags," that is, turves, under fifty shillings a hundred.

7. Also, not to lop or top any timber tree, under the penalty of twenty pounds; nor other tree, under ten pounds; nor cut underwood or hedgewood (except as before excepted) under ten pounds a load. But, on the contrary, to preserve them from damage as much as may be; and, if damaged by others, to give every information in his power under the penalty of twenty pounds.

8. Also, not to take more than two crops of corn without a whole year's fallow, — a crop of turnips, twice hoed, — or a two years' lay, — intervening, under the penalty of . . .

9. Also, to consume on the premises all hay, straw, and other stover; and not to carry off, or suffer to be carried off, any part, under pretense of being tithe compounded for, or under any other pretense whatever, under the penalty of ten pounds, for every load carried off . . .

10. Nor to carry off, nor to suffer to be carried off, any dung, muck, etc., under five pounds a load.

11. Nor to impair the foundations of the buildings round the dung-yard, by scooping out the bottom of the yard too near the buildings; but to keep up a pathway three feet wide between the dungpit and the foundations (an excellent clause).

12. Also, not to stock any part of the premises with rabbits; but to endeavor, as much as may be, to destroy them.

13. Also, *during the last two years of the lease*, not to take in any agistment stock.

14. Also, *in the last year*, not to suffer swine to go loose without being yoked and rung.

15. Also, *in the last year*, to permit landlord, or incoming tenant to sow grass seeds over the summer corn; and to harrow them in, gratis; and not to feed off the young grasses after harvest.

16. Also, *in the last year*, not to sow less than . . . acres of fallow, of, at least, three plowings and suitable harrowings, with two pints an acre of good, marketable, white-loaf turnip seed; and, in due time, to give the plants two hoeings (*or, if the crop miss, to give the fallow two extra plowings*) in a husbandlike manner; and, at the expiration of the term, to leave such turnips growing on the premises; free from willful or neglectful injury; under the penalty of . . . pounds an acre.

17. Also, to permit the landlord or incoming tenant to begin, on or after the first day of July, *in the last year*, to break up the two years' lay (hereafter agreed to be left) for wheat fallow, or any other purpose; and to harrow, stir, and work the said fallows; and to carry and spread dung or other manure thereon, without molestation.

18. Also, *in the last year*, to permit landlord, or incoming tenant, to lay up hay, or other fodder, on the premises, and to protect it thereon.

19. Also, to lay up and leave upon the premises, *at the expiration of the lease*, all the hay of the last year (or of any preceding year, if unconsumed at the expiration of the term) except . . . loads, which tenant is allowed to carry off.

20. Also, to lay up, in the usual barns and rickyards, the last year's crops of corn; together with the tithe, if compounded for; and to thresh them out in proper season; and in such manner that the straw, chaff, and colder shall be injured as little as may be.

21. Also, *at the expiration of the term*, to leave no less than . . . acres of olland [meadow-land, literally old-land], of two years laying (including that which may have been broken up by landlord or incoming tenant) and which shall have been laid down in a husbandlike manner, after turnips or a summer fallow, with not less than twelve pounds of clover, and half a peck of ray grass, seeds an acre—under the penalty of . . . pound an acre. Also not less than . . . acres of olland, of one year's laying, to be laid down as above specified, under the penalty of . . . pound an acre.

22. Also, *at the expiration of the term*, to leave all the yard manure, produced in the last year of the lease, piled up in a husbandlike manner, on the premises; excepting such part of it as may have been used for the turnip crop; and excepting such other part as may have been used by landlord, or incoming tenant, for wheat.

23. Also, *at the expiration of the term*, to leave the buildings, ladders, gates, fences, watercourses, etc., etc., in good and tenantable repair; landlord in this, as in every other case, performing his part as above agreed to. Also, upon such parts of an estate as lie near the residence of the owner, it is customary for the tenant to agree to furnish annually, a certain number of loads of straw, according to the size of his farm; also to do the carriage of a certain number of loads of coal; also to keep dogs, warn off sportsmen, and suffer them to be prosecuted in his name: remnants, these, of the ancient base tenures of soccage and villanage.

Tenant to be allowed, 1. The full value of all the hay left upon the premises, of the last year's growth, or of the growth of any preceding year; provided the quantity of old hay do not exceed . . . loads.

2. Also, the full value of the turnips left on the premises; or the accustomed price for the plowings, harrowings, and manuring; at his own option.

3. Also, the feedage of the lays broken up, by the landlord, or the incoming tenant, from the time of their being broken up until the expiration of the term the ensuing Michaelmas; also, for all damage arising in carrying on manure or otherwise.

4. Also, the feedage of the young clovers, from harvest to Michaelmas.

5. Also, the use of the barns and rickyards for summer corn until Mayday; and for winter corn until the first of July next ensuing.

6. Also (by way of a consideration for the stover), the customary price for thrashing and dressing the corn; the landlord, or incoming tenant, also carrying the same to market, gratis: provided the distance required to be carried does not exceed . . . miles, and the quantity required to be carried, at one journey, be not less than . . . coombs. [A coomb is equivalent to four bushels.]

All the above *allowances* to be referred to two arbitrators; one to be chosen by each party, in Michaelmas week; and the amount awarded to be immediately paid down by the landlord, or the incoming tenant.

CHAPTER XXVI

MARKETING FARM PRODUCTS

The problem. Thus far we have studied the economic principles which underlie the activities of farmers in bringing agricultural products into existence. This is usually called the economics of production. We have also studied the economic forces which determine the share of the farm value of these commodities which goes to each of the factors of production, namely, as wages of labor, interest and depreciation on equipments, the rent of land, and the profits of management. This division of returns is usually called the distribution of wealth. We now turn to the problems of marketing. From one point of view marketing is a productive function because it adds place or time utility to commodities. From another point of view the economics of marketing is a problem in distribution because it has to do with the forces and conditions which determine how the dollar paid by the consumer is divided among the men who participate in the supplying of the article, from the farmer at the one end to the retail dealer on the other end of a longer or shorter line of middlemen.

We are interested in marketing as a productive activity from the point of view of introducing economies into the system and thus reducing the cost of the service, to the benefit of all concerned. We are interested in the marketing problem also from the standpoint of establishing a just division of the consumer's dollar among those who participate in providing the product at the point where the consumer gets it. This has been otherwise designated as a square deal.

Direct sale. Some products are carried by the producer to the consumer. Milk sold in a small city is a good example of direct sale. Potatoes and garden truck are sometimes sold in

this way. In some places farmers carry their produce to a market place to which the consumers come to make purchases. These sales all imply close proximity of producer and consumer and hence are limited to goods produced in the neighborhood of where they are consumed.

By means of public carriers such as the parcel post, the express companies, and the railways, farm produce may be carried great distances directly to consumers. In this case there is, of course, one intermediate organization which, acting as an agent, renders a middleman service for a fixed rate of charge.

Each form of direct sale has its difficulties. Where goods are carried directly to consumers the producer and consumer must in some way find each other and come to some agreement as to terms of sale. For example, a farmer who lives five miles from town has a few tons of timothy hay to sell. He telephones to the liverymen, the ice and coal men, the operator of the sand pit, because these men keep large numbers of horses. One liveryman is found who wants one load of hay and the sand man takes one load, but the roads are good, it is spring before work in the field has begun and other farmers are anxious to sell hay. So many farmers offer hay at the market price that the buyers believe the market will break. As a result the hay is left at the farm, the wagon stands empty, the horses stand munching hay in the barn, and the farmer turns to his wood splitting. By the next week the fields are dry and horses and men are pushing hard to get the oats seeded. Just when he has it figured out that he can finish a given field by Saturday night, the telephone rings and the sand man wants a big load of hay right away at the old price, of course, at which he did not care to stock up when the farmer was free to haul, for he is out of hay and must have a load. The farmer debates the matter in his own mind. Time in the field in oat-sowing is very valuable — possibly as high as two dollars an hour for a man and team. To haul a load of hay will take a man and team five hours, making an opportunity cost of ten dollars to haul the hay; whereas if the hay could have been hauled when field work could not be done, the opportunity cost would have been no more than a dollar.

The conclusion arrived at is as follows: I can't leave my crop work to haul hay, for the number of days I can work in the field is very limited and I have planned all the field work which can be accomplished during the available time. Hence I had better sell the hay for much less and choose my own time for hauling it, but to sell it all and choose my own time I must have it baled and sell it to the feed man who will keep it in stock and sell it to the sand man when he wants it. Thus after some experience the thoughtful farm manager decides to abandon the direct sale of hay, and yet many of his neighbors sell hay direct and deliver it when it is wanted. Many market gardeners have tried hawking their goods on the streets, or standing in the market place awaiting customers. The main difficulty is that the time thus spent can be used more profitably by a good gardener working on his farm. The result is that the more successful gardeners decide to sell their produce wholesale and devote their energy to the problems of economy in production, leaving the retailing of garden truck to those who are at the same time retailing other things also and making a business of it.

The milk business succeeds better on the direct sale basis for the reason that a line of customers can be secured who take about the same amount of milk from day to day. When the farmer's milk wagon starts out each morning the driver knows where he is going and to whom the milk will be sold. If the route is badly scattered this becomes an expensive system, but for farmers living near the city there seems to be a profit.

One of the main difficulties in delivering milk from the farm is the producing an even supply of milk for the trade. Some months too much is produced; other months not enough. The disposal of the surplus in the one case and the finding of means of increasing the supply at another time worries the farmer milkman, and in many instances makes him glad to leave the distribution of milk to a man who makes that his business. The larger the city and the farther the farmer has to drive in order to get to his customers, the more desirable it is to introduce the milk dealer, who is of course a middleman.

Where distances are too great for the meeting of producer and consumer, direct shipment may be resorted to. Butter, eggs, poultry, and vegetables have been shipped to special customers. While this method has rarely proved cheaper than other systems because of the smallness of the shipments and the expense of the packages, yet it has proved a means of putting high quality produce into the hands of those who appreciate quality and are willing to pay the price.

Sales to and through middlemen. The development of modern systems of transportation, the growth of great industrial cities, and the expansion of specialized commercial agriculture has brought with it a complex middleman system which needs to be studied with care with a view to its better organization with a greater economy and justice.

For some articles the market may be said to be world-wide, because the entire product is effective in determining the market price. This is true of wheat, wool, cotton, sugar, tea, silk, and many other nonperishable articles in general use. Liverpool has for a long time been the central wheat market of the world. Being a port situated on the outer edge of the wheat-deficit area of western Europe, Liverpool became the objective point of shipments of wheat from all wheat ports of the United States, Canada, South America, Australia, New Zealand, India, and Russia. In each of the countries producing a surplus of wheat, primary wheat markets were established such as Chicago, Minneapolis, St. Louis, Kansas City, and many other points to which the wheat is shipped from the farmer's local station. Thus there are many stages, many processes, and many middlemen between the wheat producer and the bread consumer. The local grain dealer buys grain at all times in any quantity and of most any quality the farmer has to sell. He holds it in his warehouse until he has a carload lot and then ships it to a primary market, consigning it to some commission firm at that point for sale. At this point the wheat may be milled into flour and by-products or it may be cleaned and graded and reshipped in the direction of the wheat-deficit areas of the world. In either case, owing to the great distance, the wheat or its

product — flour — is sold and resold many times, so that while many men handle the wheat many men own the wheat, so that there is always some one near who has a proprietary interest in the wheat. Do these men, each in turn, render a service? They do. *Is this service rendered in the most economical manner and for a just charge?* This question is not so easily answered, and here lies the center of the middleman problem. This is the real issue between the farmer and the middleman, — an issue which has not been well defined as a rule by those who have talked most about it.

CHAPTER XXVII

THE FARMER AND THE MIDDLEMAN

DURING the past ten years the marketing problem has come prominently into the foreground. To some it has appeared that the middleman is in a position to demand that his basket be filled without rendering a corresponding service. To others it has appeared that the present system of marketing is wasteful of human energy because there are too many middlemen. There is truth in both of these suggestions, but, as often presented by the cartoonist and by the excitement-loving editor, much besides the truth is conveyed to the reading public. Fortunately, while the earlier farmers' conventions dealing with this problem indulged largely in emotions and sentiments, recent meetings of farmers give primary attention to fact and reason.

Our pioneer forefathers were not confronted with the modern marketing problem. Their agriculture was conducted more largely with a view to the direct satisfaction of their own wants. With the cheap freight rates resulting from modern methods of transportation, agriculture has become commercial. The farmer produces primarily for the market, and the farmers of the different parts of the country give a more especial attention to some one or two lines of production. For example, the Dakotas produce wheat; Iowa markets hogs and cattle; Wisconsin specializes in dairy products and potatoes; Texas sells cotton and cattle; and other states likewise have their specialties. Each state produces a large surplus of a few articles and must buy many articles from other states. It is the exchange of these specialties which brings the marketing problem into the foreground.

Those who criticize modern commercial systems as wasteful are certainly not comparing the present system with that of the

self-sufficing economy of the isolated pioneer, but rather with some ideal which lies as a possibility of the future. Commercial agriculture, that is, production primarily for the market and buying upon the market many of the articles consumed by the farmer, is more productive because: (1) each agricultural territory can be devoted to the production of those articles for which it is by nature especially suited; (2) each man may devote himself to the lines of agriculture in which he is most effective; and (3) the agricultural classes may benefit by the economies introduced into manufactures by machine methods and large-scale production. To appreciate the economic significance of the change from the self-sufficing to the commercial economy one need only compare the comforts enjoyed by the modern farmer with those of the pioneer.

With this great advantage accruing to the farmer as a result of the commercial system, the question properly arises in your minds, what are the farmers kicking about? Why are they condemning the middleman who is essential to the commercial system? This is the question the writer will attempt to answer.

In the first place there are men who make it their business to stir up trouble. These men take a few more or less well-established facts and by the free use of their fertile imaginations weave a fabrication which appeals to the avarice of men. It is popular in this type of agitation to make a statement somewhat as follows: "When the consumer pays a dollar, the farmer gets only forty-eight cents"; and then with a rolling of the eyes and a stern, excited look intended to imply that he himself has seen many of the thieves, the speaker says, "Who gets the rest?" The reply desired is, "the middlemen — the thieving middlemen."

But why do intelligent farmers listen to such foolishness? For a very simple reason. However intelligent they may be regarding farming, they are uneducated on the subject of middleman processes and the costs of the middleman services. Their honesty and good faith in the matter is demonstrated, when, following in the wake of the "middleman swatters," the wily

promoters of creameries and farmers' packing companies call upon them for liberal stock subscription, at least $17\frac{1}{2}$ per cent of which is available for paying expenses of promotion.

The farmers know a great deal about producing cotton and wool and corn and hogs and wheat and cattle and dairy products, but they know but little as a class about the functions of the middlemen, made necessary by the modern commercial organization of industrial society. The farmer takes cotton or grain, his hogs and his cattle, or his milk to the local market and surrenders them to the local buyer. Year after year he may see the train pull out of sight around the curve below the corner of his farm without any clear vision of what happens to his products from that point.

In the main, the functions of middlemen are little understood by the producers or by the consumers. What is in the dark may be evil, and his human imagination is prone to draw grotesque pictures of what may happen in the realm of the unknown. Thus it has come to pass that the producer sometimes covets the whole dollar which the consumer pays for his products and looks with disgust at the fifty-two cents which he receives. This is a fertile field for sowing the seeds of discontent and there have been plenty of writers and cartoonists ready to ride the crest of the wave of popularity which has given prominence in recent years to the marketing problem. It is only recently that this onslaught has been participated in by the farmer. The farmers have in general maintained a passive part while the politicians and professional agitators have played the leading rôle with the paid writers and cartoonists as emphatic seconds.

The thing that is needed most at the present time is education on this question of middleman processes. It is not the writer's purpose to imply that the producer is wrong in thinking there may be an injustice, but it is his purpose to say that the starting point in solving the marketing problem is not what may be imagined about middlemen but the actual facts about middleman services and middleman charges. This is a problem for the scientist. The scientific economist should turn on the light so that all may see the truth. He should study carefully and

describe accurately what happens to a product from the time it leaves the farm until it reaches the consumer. In the light of these facts intelligent and safe steps may be taken to improve conditions, whereas legislation striking in the dark stands great chances of doing harm and little chance of doing good.

When the fog is cleared away the true character of the issue may come into view. It will be recognized that, in general, middlemen render a service. *The real issue between the farmer and the middleman relates to the fairness of the charge made for the service.* That more economical methods may be introduced at certain stages in the middleman process will be accepted without debate. A survey of the work of the middlemen which would show how to replan the route from producer to consumer, in such a manner as to shorten the line and reduce the number of stops and the amount of rehandling, should be acceptable to every one concerned. The wisest middlemen would be the first to accept the new economies. There is clearly no issue here between the middleman and the endmen. The real issue then is the fairness of the charge for the middleman service.

This is an important issue from the farmer's point of view. When considering the prices of the supply of farm products on hand at the end of a given harvest the farmer may be looked upon as the residual claimant. He gets what is left after all charges are paid. Every expansion of middleman charges, without added service for which the consumer pays, cuts the farmer's income; every reduction in cost increases the farmer's profits.

When the consumer pays the retailer a dollar for potatoes, the dollar goes into the retailer's cash register. The retailer may have to take eighty-three cents out of the till and pay it to the wholesale dealer. Other parts have to be taken out to pay store rent, clerks, taxes, delivery, etc., but we shall omit the details and follow the main course of the remnant of the dollar which works back from one middleman to another until the farmer is greeted with his residual share. The wholesaler takes out seven cents and passes seventy-five cents over to the jobber, who pays eight cents to the railway company and keeps five cents for his own service. This leaves sixty-two cents,

which is forwarded to the potato dealer in central Wisconsin, who takes ten cents for materials furnished (sacks, car linings, and heat) and services rendered. The cash register rings out 52 cents to the farmer, and the transaction is closed, and the question, Who gets the money? is answered for one specific case. Are all these charges fair? This is the real issue and of course the burden of proof is on those who raise the question. What is a fair charge? That, in itself, is not an easy question, but equally difficult tasks should carry equal compensation as nearly as possible whether it be farmer, manufacturer or merchant. It is usually considered that where free competition exists, prices tend to become fair.

Special instances may be mentioned where unfair charges are likely to occur.

Along the railway lines in the grain-growing regions of the United States there are many country stations where one elevator can easily handle all the business. This elevator may be owned and operated by an independent grain buyer, interested in maximum returns for his services. It may be owned by a line elevator company and operated by their hired man, or it may be owned by the farmers who load grain at the station and operated by the employee of the farmers' company. Either of these methods will usually provide the necessary elevator service. And it often happens that the same man will handle the grain. The question that interests the farmers is, How can we get this service performed satisfactorily for the lowest cost? Such a local elevator partakes of the character of a natural monopoly. If the independent operator is in charge, he can make a monopoly profit which looks large to the farmer and which attracts the attention of the grain merchants at the central market. To introduce competition into the charge made for this service, the independent operator is replaced by an employee who works for a competitive wage. Who, then, gets the monopoly gain which had formerly gone to the operator? The employer, of course. If the line elevator company is the employer, the monopoly charge may be increased due to the elimination of the tendency for the operators at different

stations to compete for the trade in the middle zone between the railway stations. On the other hand, if the elevator is owned by the farmers, the monopoly gain is eliminated, local prices are increased, production is stimulated. Increased supply tends to lower prices to consumers and thus the benefits of coöperative elevators are divided between the farmers and the consumers.

Another example of what often appears to be an excessive charge for local middleman services is that found at the local stations in the districts from which potatoes are shipped. Upon visiting one of these loading stations one is first impressed with the fact that there are very many warehouses at each station and for this reason may assume that monopoly charges are impossible. As a matter of fact an excessive number of warehouses and potato dealers, as well as an excessive number of grocers in a small town, may result in price agreements, which give basis for monopoly charges for services rendered. It is believed by many that a condition of this kind has at times existed in the potato district of central Wisconsin. The method of eliminating this monopoly has been the introduction of the farmers' warehouses, where the service is performed by an employee of the farmers, working for a competitive wage.

It is well established that wherever there is a tendency toward a monopoly charge for a middleman service which is performed locally, where the farmer comes in contact with the warehouse and the man performing this service whenever he sells his products, coöperation is the natural and effective method of eliminating the monopoly charge and distributing the benefits widely through society.

But there are other middleman functions which are not under the eye of the farmer. These are in operation at the central markets and beyond, and for brevity in this discussion will be called central market functions to distinguish them from the local market functions. Examples of the central market functions are the elevator business at the primary grain markets, the packing business, and the distribution of potatoes, dairy products, and poultry. The problem of securing the services of the

middleman in the central market at a fair price has not been so nearly solved as has that of the local market. Two methods have been tried, each with some degree of success. The one method is state regulation or control, and the other method is coöperation. Coöperation may be on the part of consumers who organize to reach out after their product, or coöperation may be on the part of producers organized to reach out with their produce beyond the central market with a view to securing a higher price for their product. It is believed that both of these methods should be resorted to.

Where there is a well-organized system of marketing capable of absorbing all of the product whenever shipped, as is true of the grain business and the packing business, it would seem that state or Federal regulation is the best method of establishing fair play. These are big businesses requiring much capital and special skill and carried on at such a distance that the farmer cannot supervise the work. He must trust the supervision to others. He may not have any too much confidence in the Government, but experience will teach him that the Government is at least as trustworthy as any comprehensive organization which he can build to perform this function of securing fair play.

Where there is no well-organized central market which will absorb all the product and send it on to its final destination, the local coöperative company often finds it necessary to reach out long distances for a market. The potato market will serve as an example. The farmers' produce company is in competition with the big line companies both at the local stations and in the various cities throughout the country where the potatoes are consumed. The farmers' company can handle the potatoes at the loading station appreciably cheaper than can the line companies, but in finding a market for the limited number of cars handled by one warehouse, in competition with the line companies which are handling from twenty-five to fifty times as many cars in a year, the saving is largely lost. It is believed therefore that the federation of local companies for the purpose of finding a market is a necessary step if local coöperation is to

reap its reward in the marketing of potatoes. In general it is believed that where there are no well-established central markets subject to Government supervision, farmers will have to look to federated local companies in order to compete successfully in the distribution of their products.

The success of the Wisconsin cheese producers' federation gives ground for confidence in the ability of farmers to handle successfully the distribution of their products in distant markets. This organization has its headquarters at Plymouth, Wisconsin. Prior to its organization the farmers living in the vicinity of a cheese factory met once a year and hired a cheese maker to convert their milk into cheese at so much per pound. So far as could be determined the cheese maker did not get any too much for his services. But the cheese was sold on an unregulated market at a price which was unsatisfactory to the farmers.

The farmers had little or nothing to do with the selling of the cheese. They left this function to the cheese maker, who had no interest except the getting all of the cheese passed as first-grade product, as he had agreed to stand the loss if the product was not up to standard. This led to many irregularities, and left the farmer in a position to take whatever was handed him. In time he complained, and with the help of the State Board of Public Affairs and the Agricultural College and the blessing of a local leader who was willing to work for nothing and board himself in good missionary fashion, these local groups of dairy-men who took milk to the same factory were converted into corporate units known as cheese producers' associations. These in turn were federated into the cheese producers' federation. This latter organization hired an experienced salesman to sell the product of over forty cheese factories. They were unable to rent space in the public cold storage warehouse of Plymouth. This emergency was quickly met by building a warehouse for use. Six seasons have passed, and the federation has met with unqualified success. This gives ground for the belief that wherever the farmers have the right mettle they can successfully reach out into the central markets. There is plenty of work for the state to perform in

solving the marketing problems. Local coöperative companies would prosper better under state supervision, especially with respect to the auditing of accounts. Farmers' federated companies are doubly in need of aid and supervision in order to succeed in their more difficult task. But a still more important function for public authority is the regulation and control of private corporations dealing in farm products in the central markets and beyond.

It should not be assumed, however, that all charges are unfair and require regulation. Whenever middleman services are performed for a fair charge, and it is believed that this is true of a great part of the middleman functions, regulation by farmers or by government is but sand in the wheels of industry.

CHAPTER XXVIII

PRICE-FIXING AND THE COST OF FARM PRODUCTS

IN the preceding chapter attention has been called to the ways in which farmers may coöperate and the ways in which governments may regulate the activities of middlemen with a view to securing fair prices for farm products. In this chapter attention will be given to the question of price regulation as a means of solving the marketing problem.

Many who in the past have been satisfied to leave the fixing of prices of farm products entirely to competitive forces operating under the law of supply and demand now see the need of commissions to adjust prices. The Price Commission, to be successful, cannot represent a class, but must stand for economic justice to all classes. The condition and needs of the producer, the distributor, and the consumer must be considered with equal care. The biggest problem in price-fixing is to get the facts needed as the basis of action.

For many years the idea of price control has received the attention of farmers who have been hard pressed to make both ends meet. Dollar wheat sounds cheap now, but at one time it looked like a cure-all for the ills of the Dakota farmers. The control of cotton prices has often been talked about in times of low prices, and the price of Burley tobacco was more than doubled by the concerted action of farmers in holding their product and refraining from growing a crop in 1908. In all this agitation it was argued that the price should be enough to pay the cost of production and a reasonable profit. This point of view stimulated interest in farm cost accounting as a basis for price-fixing.

The United States Department of Agriculture and many state experiment stations have coöperated with farmers in keeping detailed records of man and horse labor, the use of equipment,

and other elements of costs, as well as the yield, in quantity and value, of each kind of product. Occasionally a farmer has undertaken detailed records on his own initiative and without official aid, but the clerical work necessary for keeping a complete system of cost accounts is more than most farmers have time to do.

In the official promotion of farm cost accounting, the purpose has not always been well defined; but there have been at least two points of view. A position taken by many who are interested in the marketing problem is that costs should be known in order that they may be used as a basis of price-fixing. A view held by men interested in the problems of farm management is that cost accounts show the relative profitableness of competing crops and live stock enterprises, and hence give the starting point for scientific farm management.

It would seem that the Federal Food Administration in fixing the price of wheat, and the Chicago Federal Milk Commission in its work of the winter of 1918-19, assumed that cost of production is the foundation of price-fixing, yet when these officials have approached the final problem of price-fixing, they have found themselves confronted with unexpected difficulties.

Why all this difficulty in the use of cost accounts as a basis of price-fixing? There are doubtless many reasons, but there are three of unusual importance. First, variation in costs; second, joint costs; and third, disagreement in the elements of costs. But in spite of these difficulties, accounting may be used in price control.

Variation in costs. There is a very wide range in cost figures secured by careful methods of accounting, and there are wide ranges in the estimates of costs by different producers. On the basis of a farm management survey made on 51 farms in one dairy district in Wisconsin, the return per dollar of annual outlay ranged from 77 cents to \$3.05. The results of the Wisconsin Dairy Cow Competition carried on in 1909-11 illustrated this point. The return per dollar's worth of feed consumed by the 398 cows in this contest varied from 92 cents to \$2.71; the average of the best ten was \$2.38 worth of product per dollar's worth of feed and the average of the poorest ten was \$1.11.

With wide ranges in the costs of production, which cost shall be accepted as the basis of price-fixing? The average has been seriously suggested but abandoned in disgust when it has been realized that a price fixed on the basis of average costs would probably result in a loss on half the farms.

The marginal or greatest costs have also been suggested. Economists have a theory that prices tend to equal marginal costs; this is thought to be true because it is assumed that the man who is producing at a loss will drop out, or, if the supply is short the price will rise to the point attracting others less favorably situated to enter the same line of production, thus tending to maintain the price at a point equal to the greatest cost, though at any given time they might be far apart. There seems to be some relation, therefore, between the highest cost necessary to produce the desired supply and the price which in the long run will have to be paid in order to get the supply.

Disagreements regarding cost factors. Determining the price at which to charge supplies produced upon the farm presents further difficulties in this regard. Shall feeds be charged at cost of production or at market price? In calculating the cost of a 1918 corn crop, should the seed corn be charged at the cost of production or at the market price? A similar question arises with respect to seed potatoes. In figuring the cost of milk the question arises: Should the hay, the oats, and the corn produced on the farm be charged on the basis of cost of production or at the market price? There seems to be an accepted rule of accounting which gives definite directions to charge all the produced supplies at cost and not at market price. On the other hand, farm cost accountants connected with the United States Department of Agriculture and the various experiment stations have quite generally charged these produced supplies at market price minus the cost of delivering them to the market.

A few years ago when the point of view was that of proving that dairying was profitable and an industry which should be stimulated by the press in every way possible, one agricultural paper held tenaciously to the old accounting rule of charging

feed to the cows at cost of production because this magnified the profits of dairying by throwing the field profits into the dairy account. Now that the point of view has changed and the price of milk is looked upon as the objective point in cow cost accounting, this same paper is definitely of the opinion that produced feeds should be charged to the cows on the basis of market price. It is not difficult therefore to understand why there should have been two opinions, on this point, before the Chicago Milk Commission. Each party accepts the rule of accounting which best serves his interest.

If there were two methods of testing the amount of butter fat in milk, one of which favored the farmer and the other the purchaser, this same alignment of the interests would doubtless be formed. Fortunately there is one accurate fat test accepted by all, hence this occasion of trouble is avoided. What is needed is to settle this question in accounting in accordance with the economic principles underlying the case.

Joint costs. The typical farm provides a much more difficult accounting problem than a sawmill, a flour mill, or a steel mill. The problem is more nearly comparable to that in railway accounting, where one expenditure affects a great number of sources of income. The farmer who produces but one crop is rare. On the typical dairy farm, corn, small grain, clover hay, and pasture, cattle, horses, and hogs are all produced. The same plows, harrows, and horses are used for the various crops which require attention at different seasons, and the same laborers are used for crops and live stock. When the corn is being cultivated the corn is not only benefited but the land is being put into better condition for the small grain crop which will be grown the next year. When the land is prepared for small grain the seed bed for the clover is being prepared, while oats or barley serves as a nurse crop for the clover plant, which in turn is able to draw upon the nitrogen of the air and provide plant food needed for its own growth and for the corn crop which is to follow. Hence the costs of these three crops are said to be joint costs.

Under these circumstances, suppose it is found that the oat

crop costs more than the market price, that the cost of oats is ten cents greater than the price. What can the farmer do about it? He can do a little figuring to see whether or not another crop which requires his attention at the same periods and which serves equally well as a nurse crop, barley for example, can be substituted with a profit or with a smaller loss. If not, should the farmer cut out the small grain crop? Usually not. The total cost of man and horse labor would be reduced little by omitting the oat crop, because oats and corn require labor at different seasons and are supplementary to each other. If this crop were not grown the hours of productive labor would probably be reduced and the average charge per hour for labor applied to the corn would be greater.

But this is not all. Oats are used as a nurse crop for clover, and while it may be possible to grow clover without a nurse crop, this would cost nearly as much as putting in the oats. Hence the growing of small grain is usually the cheapest way to get a seeding of clover, and where clover thrives this is the best way to secure nitrogen for the corn crop. Thus it is the joint results of the joint costs which are important.

Having adopted a system of farming, the parts of it should be adhered to so long as the system as a whole continues to be attractive, and so long as each part of the system continues to pay better than the substitute which is competing for a place in the system.

The corn, oats, and clover combination is not a complete system of farming in itself. It is usually combined with one or more live stock enterprises. Beef cattle and hogs, dairy cattle and hogs, or straight dairying may be combined with this cropping system. In each of these systems there are many instances of joint costs. The joint cost of fattening steers and hogs is commonly understood among feeders. Where butter fat and pigs and veal calves are the products sold, these three products have elements of joint cost. Where pure-bred cattle and milk are sold the costs are joint and inseparable; the important question relates to the profit of the system as a whole.

Where grade cows are purchased and used for the production

of city milk we approach more nearly to a specific cost of a specific product as far as the live stock industry is concerned, with only a small by-product in the form of a veal calf. And yet this type of dairying has its costs intermixed with the system of cropping, notably in the use of labor, the use of crops, and the provision of fertilizer. Hence, in mixed farming, joint costs are present to block the effort to arrive at the cost of producing any specific farm product.

Where two articles are produced as a result of the same work, the combined prices of the two tend to equal the greatest necessary cost of producing them, but the price of each article is determined separately on the basis of supply and demand.

Consumers want a variety of things produced by the farmer. How much a consumer will pay for a given article depends upon the intensity of his desire for it. The intensity of this desire depends upon how abundantly he has been supplied. The more he takes the less he will pay for any given unit of the goods. Unfortunately, under conditions of joint costs there are certain physical facts which determine the ratios in which goods are produced, without much regard to the ratios of the intensity of the desire for them. As a result the supply-demand price of one product may be higher and that of another lower than the cost, but the combination of crops may prove profitable. The case is similar to the situation in the oil business. Gasoline and kerosene have a joint cost; and it is the condition of the market and the relative proportion in which they are obtainable at a common cost which makes the price of gasoline nearly twice as high as that of kerosene at the present time.

Total farm profits and price regulation. When the point of view of total farm profits is accepted the problem becomes that of so regulating prices that the farmer in one line of production may reap as large a reward as he could earn producing some other product, or else of helping him in getting into some other line of production. By looking to total farm profits we avoid many of the difficulties arising out of differences in the costs of producing a given article by different men. Even if it costs one man 2 cents a quart to produce milk, another 3 cents,

another 4 cents, and still another 5 cents a quart in a given city milk belt, yet each of these men may be doing the type of farming which pays him best, and the industry may be stable so long as relative prices remain the same. Likewise the question of joint costs is avoided, for it is no longer a question of the cost of a specific product, but of comparing the total farm profits resulting from the various types of farming and from the different competing elements in each kind of farming. Furthermore, the question of charging feed at market price or cost of production would seem to pass with the effort to find specific costs. However, something akin to this latter problem remains. The farmer may compare the profits he would make if he sold his corn, oats, and hay at present market prices instead of feeding them to cows and selling milk. In this he should not assume that if the community turned from milk selling to crop selling the prices of all these crops would be what they were before the change, neither should he assume that his crops would yield the same if he changed to grain growing for the market. Oats and corn are used directly for human food and have many other uses, and are so easily shipped that there would continue to be a market for them if not used as cow feed; but clover hay is a stock food and it is not so easily marketed. The important alternative uses for clover if not used for cows are (1) to feed to beef cattle, (2) to sheep, or (3) to plow under as a fertilizer, any of which conserves its value as a land builder for grain growing. Where clover has entered into commerce it has usually been as a feed for dairy cows. When discarded for this use, therefore, the marketing of clover hay could not be counted upon. A farmer in the Chicago milk district, for instance, insists that it pays better to sell grains and plow the clover under than to make clover hay and feed it to live stock. He is practicing this system and is satisfied. In this and similar cases it is the alternative use value rather than cost or present market price which becomes the basis of comparing the profits of types of farming, and hence the basis of choice.

This means that formally assigned specific costs are of little use in the discussion of price-fixing where the products in

question are produced under condition of joint costs. It does not mean, however, that cost accounting is of no use in the study of this problem; in fact, accounts are very necessary, but in a different way from what has been supposed. Accounts are useful to the farmer in making choice of crops and live stock enterprises and his methods of production. Accounts are useful to the price commissioner in estimating the price necessary to call out continuously the desired supply of produce of a given kind and of suitable quality. For these purposes specific costs may not be needed. What are needed are figures comparing the profitableness of the different things to which the producer can turn his attention. The alert farmer is ever figuring on the combination of crop and live stock production which will pay him best with a given price schedule and with given costs for land, labor, and equipments.

When the point of view in farm cost accounting is shifted from specific costs to comparison of profits the whole problem is much simplified. In the attempt to secure specific costs, accounts had to be kept in minute detail comprehending every activity and economic relation of the farm. As soon as one shifts to the point of view of comparing the profits of competing enterprises, no record need be kept unless the farmer really has a choice and then only such records as are essential to answering the question, Does this pay better than that? For example, the farmer in southern Wisconsin has a choice between growing oats and barley. In order to make a wise choice on this point it is not necessary to know the specific cost of growing either oats or barley. All that is necessary is to know differences in costs and differences in the value of the crops. In this case the same tools, machinery, horses, and men are used at essentially the same time of year whether the farmer grows the one crop or the other. These common items of cost may be omitted, for they cancel each other in the calculation. When put in this form the question is so simple that almost any farmer can figure it out on the basis of such facts as are easily available by keeping a production record and by studying price quotations.

The milk producer has a number of ways of disposing of his

product. He may sell whole milk to a city, or a condensery. He may take his milk to a cheese factory and carry home the whey, or he may separate the cream and sell it for city use or to a butter factory. If the milk is marketed through the cheese factory, hog production is introduced as a supplementary industry using the whey. If he sells cream, calf raising and pork production may be combined with dairying as a means of using the skim milk. All of these different types of dairying can be based upon the corn-oats-hay cropping system. The combination a given farmer should choose depends upon which pays best under his particular conditions of production and marketing.

The dairy farmer has, of course, other alternatives. He can change from dairying to beef and pork production, based upon the same field crops. Again, he can abandon cattle and hogs entirely, grow grain to sell and raise horses as a side-line to use up much of the unsalable roughage; but in figuring the merits of this last system, influence upon fertility and production of grain per acre should not be ignored. He has the further alternative of trying his fortune in the city, and this horn of the dilemma has frequently been the choice.

With all these opportunities before them, the farmers are slow to shift from one thing to another in normal times because, for a given community, the question of what pays best becomes fairly well settled. Near the cities, whole milk of high quality is produced under sanitary conditions of a higher standard than in other dairy regions. Outside of the milk zone there are scattering cream shippers selected mainly with respect to the characters of the farmers participating. These are intermingled with the farmers producing for the creameries and cheese factories. The city milk zone becomes more or less well defined with the boundary line moving out a little farther in winter and contracting in summer, with a gradual expansion of the milk zone about a growing city.

But in abnormal times, when radical changes are taking place in the prices of all these competing lines of production, farmers with their eyes upon the market become uneasy and unsettled in their convictions as to what to produce. The fact that the

producer of city milk is getting more than he ever got before is not a sufficient consolation if he might be making more profits selling grain, hogs, and butter fat, in spite of the fact that he has gone to greater expense to equip his farm for meeting the requirements of the city ordinances. It is this unsettled condition which has given rise to the recent efforts to regulate prices.

In deciding upon a fair price to the farmer on the part of a commission the alternative choices of the farmer become the basis for a rational decision. The industry should be made attractive to the farmer if he is expected to remain in it. But what is essential to make a given system of farming attractive? Must it pay some definite labor income to each farmer engaged in it? Apparently not, for as a matter of fact men are remaining in each type of farming who are making small incomes while others are making very large incomes.

Whether or not a man should continue to carry on a given type of farming depends upon his opportunities in other lines of farming or other lines than farming. If there is no better outlook, if he is doing better than he could do in any other place, he will probably continue to produce the supply for the price he can get and look to methods of reducing costs as a means of increasing profits. If there is an alternative which will pay him much better, which should he do, ask that his price be lifted to the point where his present activities will pay as well as the alternative or quietly choose the better paying activity? The answer is not so obvious as it might at first appear. Shifting is often expensive, and there is usually hope that conditions will change and the old line will again pay better. It often takes a generation to build up a type of farming, and when the system becomes unprofitable a serious loss is suffered before readjustment can be made. Yet where permanent changes in market conditions have come about, changes in farming are necessary. Where readjustments should be made it is believed that public expenditures to aid in the readjustment, especially by means of educational campaigns, may often be more desirable than price lifting as a means of making the industry profitable.

Here is work for price commissioners well trained in agricultural economics, who will ascertain the true cause of price changes, make a study of the conditions of production, and advise the farmers in making readjustments in their farm management or in standing by their old lines of production as the case may warrant. In this work the price commissioner should not forget that the well-being of the farmer is just as important as that of the consumer, and that in the long run prices should be such as will make farm work and country life attractive.

In carrying out this policy, price lifting may at times prove desirable. This is most likely to happen in case of articles like milk for which the price is more or less influenced by custom and which is often sold at the same price for long periods and which for this reason does not adjust itself quickly enough in times of radical changes in the general price level; but wherever isolated farmers in great numbers are acting individually in selling their produce to great corporations, need may often arise for price regulation by public authority to maintain the public interest.

In deciding upon prices both the farmer and the price commissioner should keep the long-time as well as the immediate effect in mind. It takes decades to build up the dairy industry in a community. Equipments require time for construction. Years are required to build up good herds, and decades are required to train a whole community in the fine art of producing high-class milk. When such a community is diverted from dairying to another line of production, the farmers suffer a great loss while making the change and while adjusting themselves to new lines of production, after which they may again prosper. But if the farmers are needed to produce the supply of milk essential to the welfare of the people of the city, the loss of skilled dairymen will result in a heavy loss to the consumers, who will have to pay higher prices for milk, and probably find it necessary to lower their standards with respect to quality in order to get the necessary supply.

Hence it is the long-time averages which must be considered. The records of one year may indicate that the profits would have been greater had the farmer been in another line of production,

similar to that practiced outside of the city milk belt. In contemplating these figures, the farmer should look for the unusual conditions which have made this true. If the conditions are temporary he should hold fast to his present line and recall the years when his profits were much the greater because he was in the dairy business.

If, however, it becomes apparent that permanent changes in market conditions have taken place which account for the change in profits, a move should be initiated to bring about a readjustment of the farming to suit the new market conditions; possibly some dairymen should change to other lines of production. But this is not a matter for hasty action, especially in the case of the dairy industry, where public welfare is at stake and where a change has far-reaching effects through a series of years.

Changes which the farmer may make in grain production or hog production may be quickly readjusted, but not so with milk production. One's ill feelings towards other people should not enter one's decision. One should not get angry and sell his herd of cows. Cold reason should form the basis of judgment. It is easy to disperse a good dairy herd, but it takes years to rebuild it. A much safer plan is to cut down a little on the number of cows by culling-out the less profitable ones and to sell some grain or hogs in addition to milk rather than to make a radical change in type of farming.

If the profits of milk production are temporarily low on a large share of the farms in a given city milk belt, due to short crops of grain and hay, which for this reason must be shipped in at heavy cost, the farmer should not only look to the long-time average, and to the maintenance of his market, but he should recognize the occasion of his loss, namely, the short crop, and should lay this loss to the land or to the way he has handled his land and not ask that the consumer should pay the rent on the land which did not produce the feed and also pay for the purchased feed.

The farmer should not be too insistent upon the consumer's price varying exactly with his costs from season to season and from year to year. Custom is a big item in determining what

people will eat. So long as prices are the same the customer is not likely to change, but every time the consumers' price changes, consumption customs are shaken; and the more violent the change the more likely the custom is to be upset. It is not only the industry, then, but the market which may be damaged by impassioned actions.

Just as it is by comparing profits that the farmer makes choice of types of farming, so it is by comparing prices in the market that the consumer makes choice. If it is done in the right way, the price of one commodity may be raised as rapidly as that of its substitute. So long as relative prices are the same, the choices may be expected to be the same. If, however, much publicity of an antagonistic sort accompanies the change in the price of one article while the change in another is accompanied by shrewd advertising which wins the sympathy of the consumer, there may be a falling off in the demand of the former and an increase in the consumption of the latter.

Price commissions should make a careful study of the amount and character of the product demanded at various prices and the character and amount of the product which can be secured at these prices, and adjust the price on the basis of maintaining an equilibrium between demand and supply through a long period. In doing this, account will need to be taken of the substitutes to which the consumer may turn, as well as profits in other types of farming to which the milk producer may later change if the price is fixed too low compared with other prices.

The forces and conditions which determine supply and demand are too little understood. The law of supply and demand as a price regulator does not always give satisfactory results. It might be made to work much more equitably under the guidance of a commission than when influenced by the unequal bargaining power of great distributing corporations on the one hand and of the isolated producers on the other.

A properly organized permanent price commission might inaugurate an educational program which would improve the mutual attitude of mind of the producer and consumer toward each other, which would make each more considerate of the

rights of the other that are in the long run fundamental to the interests of all concerned.

Furthermore, such a commission, well informed with regard to the facts of production, distribution, and consumption, would form a desirable medium for collective bargaining between the organized producers on the one hand and the organized distributors on the other, which appears to be the logical outcome of recent tendencies and which would appear to be desirable wherever large numbers of isolated farmers are selling to large corporations such as the milk distributors in the large cities, the packers and the grain dealers, and possibly in many other instances. Even where the more specific functions of price-fixing are unnecessary, there is an important work for price commissioners in studying market conditions and the conditions of supply and in educating both producer and consumer to rational action.

Statistical and historical methods of studying prices in their relation to production will prove valuable to price commissioners. Cost accounts are useful but should be supplemented by statistical studies showing the effect of various price relations upon supply and upon demand through a series of years. It will be desirable to use every method of research known to economic investigators in arriving at sound bases of judgment in the control of prices.

CHAPTER XXIX

THE SOCIAL SIDE OF FARM LIFE¹

THE growth of national wealth makes possible improvements in the conditions of life in the farm home and in the rural community. The tendency has been for the various modern conveniences to be introduced more slowly in the homes of the farmers and in the social life of the rural communities than in the more densely populated centers. This is true partly because of the greater opportunity for human contact in the cities than in the country, partly due to the fact that some of the city conveniences can be provided more economically on a large than on a small scale, and partly to the fact that farmers who have been prosperous and gained a competence have too often given their attention to buying more land rather than to the improvement of the conditions of life in the home and in the social group.

Leaders like Sir Horace Plunkett have emphasized that with "better farming and better business" should go "better living." The natural opportunities for a full life are better in the country than in the city. It is now practicable to bring into the rural homes the conveniences which make for comfort. The possibility of organizing social life in the country in a satisfactory manner has been demonstrated by many communities.

In order that greater progress may be made in bringing about conditions of "better living" in the country the conditions of farm life are being studied with a view to helping farmers in their efforts to reach out for the better things of life.

Rural hope. The progress of the land worker up the ladder of financial independence is marked by a continual struggle on his

¹ This chapter was prepared especially for this book by Dr. J. C. Galpin and Miss E. J. Hoag.

part, both with forces within himself, which he often fails to understand and control, and with the forces of the outside world which limit his actions in striving for success. He encounters subtle resistance at every step on his way, yet he is able to rise from the position of hired laborer to that of tenant farmer, from the position of tenant farmer owning the equipments to that of owner of the land and possessor of the profit, from isolated farmer to member of an organized economic group.

Is there equal hope for the development of the social side of the farmer's life? Is there opportunity for growth in the cultural, educational, religious, and æsthetic aspects of the life of the farmer and his family, commensurate with its economic progress? It is the aim of this chapter to set forth the elements of the social side of farm life, so as to disclose the basis of rural hope.

The Country Life Commission. In 1908 Theodore Roosevelt, then President of the United States, appointed a commission on country life, for the purpose of gaining such information and advice as would enable him to make recommendations to Congress in the interest of better country living conditions.

President Roosevelt's letter appointing the commission affords a good introduction to the study of the social side of our farm life, as in fact it may be considered the beginning of the country life movement in America. The following sentiments from the letter form a significant admission that the social side of farm life, as a national problem, has lain outside the line of sight of farmer, on the one hand, and statesman, on the other :

"The social and economic institutions of the open country are not keeping pace with the development of the nation as a whole. . . . The farmer must first of all grow good crops in order to support himself and his family. But when this has been secured, the effort for better farming should cease to stand alone and should be accompanied by the effort for better business and better living on the farm. . . . Agriculture is not the whole of country life. The great rural interests are human interests, and good crops are of little value to the farmer unless they open the door to a good kind of life on the farm. . . . How can the life

of the farm family be made less solitary, fuller of opportunity, freer from drudgery, more comfortable, happier, and more attractive? . . . How can life on the farm be kept on the highest level? . . . How can a compelling desire to live on the farm be aroused in the children that are born on the farm? . . . All of these questions are of vital importance, not only to the farmer, but to the whole nation. . . . There is no more important person, measured in influence upon the life of the nation, than the farmer's wife, no more important home than the country home. . . . The farmers have hitherto had less than their full share of public attention along the lines of business and social life. There is too much belief among all our people that the prizes of life lie away from the farm."¹

In response to President Roosevelt's letter, the Country Life Commission made an analysis of the main deficiencies in country life, and suggested remedies for the deficiencies. Three important recommendations were handed to President Roosevelt. First, a recommendation was made for a comprehensive plan of study or survey of all the conditions that surround the people who live in the country. The commission suggested that federal and state governments, agricultural colleges, other educational agencies, organizations of various types, and individual students of the problem be brought into coöperation for the great work of investigating with minute care all agricultural and country life conditions.

Second, a campaign for rural progress was mapped out. The commission believed there should be held state and national conferences on rural progress, designed to unite the interests of education, business organization, and religion into one forward movement for the rebuilding of country life.

Third, according to the recommendations of the commission, each state college of agriculture should be empowered to organize as soon as practicable a complete department of college extension. The work should include such forms of extension teaching as lectures, bulletins, reading courses, correspondence courses, demonstration, and other means of reaching the people at home

¹ The Report of the Country Life Commission.

and on their farms. It should be designed to forward not only the business of agriculture, but sanitation, education, home-making, and all the intimate interests of country life.

National attention centered upon the farm family. The report of President Roosevelt's Country Life Commission in December, 1908, although not acted upon by Congress as the President had looked for, aroused universal interest in country life. The press was quick to give wide publicity to topics which had never before found a place in magazine or daily. State conferences on country life matters, drawing together rural people, were called at agricultural colleges, state universities, and normal schools in nearly every section of the United States. Farmers' organizations, religious bodies, and business clubs were centers for the discussion of this new subject. From 1909 to 1914 city dailies, national magazines, and country weeklies devoted constantly increasing space to country life progress. In 1914 the tragedy of the World War, however, quickly reduced the space given by the press to the social side of farm life, and forced the food side of farm life into greater prominence.

However, the agitation of conference, pulpit, and press during the five years succeeding the report of Roosevelt's Country Life Commission report left a distinct trace in American thought. National attention was turned to the human beings on the farm and to farm life institutions. There was at once an arrest of flippant talk about the farmer and his family. Country foibles ceased to be the butt of jest, and earnest effort was started to understand social conditions surrounding the land worker.

After the first crop of superficial opinions and remedies, came a determination to study seriously all phases of human life as related to the farm. Commissions were appointed in the field of rural religion, rural education, rural health and recreation. Colleges appointed instructors in rural life, and "rural sociology" became a claimant for a place among the sciences. A group of young rural socio-economists developed. Theological curricula began to give attention to the "rural church." State boards of education began policies of redirection of rural schools. University extension work added the "farm house

and home " to its projects, and agricultural colleges and religious bodies took the first " surveys " of rural life.

Broad interpretation. To thinking people the country life movement is not in any sense a literary revival of the poetic appreciation of nature, the open road, the pictured sky, and the rural landscape. Nor is it a philanthropic enthusiasm with an " uplift " motive. The country is not a national, out-of-the-way slum to be cleaned out. Neither is the movement a conscious class struggle of farmer against townsman.

But rather this new movement is to be interpreted as a creed, a belief, if you please, that country life has latent social forces which are susceptible of development; that reorganization of rural forces in such manner as to replace poorly adjusted social relations with natural and logical adjustments will free the farm population for a full and fair life. Those most closely in touch with the new rural hope believe that national life, yes, even urban life, will be equally benefited by a development and reorganization of country life and its institutions. How far this rural hope, aroused by the country life movement, is justified by the facts of country life, labor, and struggle, it is our purpose to determine in the topics which follow.

Rural investigations. The Country Life Commission, in its list of deficiencies, gave prominence to " a lack of knowledge on the part of farmers of the exact agricultural conditions and possibilities of their regions. . . . The time has now come," the report reads, " when we should know in detail what our agricultural resources are. . . . We cannot make the best and most permanent progress in the developing of a good country life until we have completed a very careful inventory of the entire country. . . . This would result in the collection of local fact, on which we could proceed to build a scientifically and economically sound country life."

The chairman of the Country Life Commission had been an exponent of agricultural surveys for nearly two decades. It was but fitting that he should be the person to sound the note for country life surveys and expound the survey idea as applied to the social side of farm life. In 1911 he set forth the following

general ideas on the scope and character of rural survey work: The real rural survey, he stated, should be a slowly and studiously made record, rather than a mere exploration, an inspection, a canvass, or a campaign. It was his belief that any lighter efforts, however necessary for temporary uses, belong to a different order of inquiry. Then, too, according to the chairman, the survey should be strictly scientific in spirit, taking account of every significant fact, wholly apart from bias in the mind of the surveyor, the goal being the making of a record of the entire situation, and the telling of the whole truth, in order to accumulate a substantial body of fact, so that every community might build its life upon the fact of the community. It was the plan of the chairman that these surveys should be made by many agencies, such as colleges, schools, departments of agriculture, and experiment stations, assisted by societies, churches, welfare agencies, and individuals, all working under a plan of coöperation.¹

Some rural surveys. In response to the policy of study, investigation, and survey set forth by the Country Life Commission, "an agricultural survey" in 1911 in Tompkins County, New York, although devoted mainly to labor-incomes, took stock of certain country life features, and pioneered the way in survey making. Consideration, for example, was given women farmers. Their labor incomes were compared with the labor incomes of men. Their help problem on the farm was inspected. Their total opportunity was assessed.

To take another instance, the farm near town or city, as a residence, home, and side occupation for people in town or city occupations was considered. The opportunity for a lawyer, teacher, mechanic, and the like, to live in the country, operate a farm, and still carry on work in town was estimated on the basis of the instances encountered.

The value of good country roads was not allowed to pass unnoticed. The empty houses in the country were explained, interpreted, and differentiated from abandoned farms.

An interesting correlation was made between the education and labor incomes of farmers in Tompkins County. A high school

¹ L. H. Bailey, "The Survey Idea in Country Life Work."

education in this area of investigation was apparently equal to a \$6000 bond bearing 5 per cent interest. Younger farmers, however, did not seem to be more highly educated than their elders.¹

A remarkable series of "Rural Life Surveys," made from the point of view of the church, in Missouri, Ohio, Tennessee, Maryland, Illinois, Kentucky, Indiana, and other states, began to appear in 1911 and continued through a period of several years. In each state selected several counties were surveyed, generally by townships. The economic conditions, the general character of the population, the social mind (involving communication, community manners, meetings, amusements, families, coöperation, organizations), clubs, education, recreation, morals, religious conditions and activities, social welfare (involving public health, distribution of wealth, community improvements), maps and charts, are all included in the wide array of topics taken up by these studies. Photographic illustrations of bad and good conditions appear frequently in the pamphlets. This series of surveys has had a wide influence, especially in focusing attention upon bad rural conditions, and leading people to a program of rural progress.²

Some significant township social surveys have been made by various universities and colleges. These cover the range of social, religious, educational, health, and economic conditions in a general way, and mark the beginnings of serious effort to correlate the facts in the whole field of country life.³

A few educational studies covering the rural school situation in a state have been published by departments of public instruction, state universities, and colleges of agriculture.⁴

¹ C. F. Warren, "An Agricultural Survey," Bulletin 295, Cornell University.

² The Department of Church and Country Life of the Presbyterian Board of Home Missions.

³ Carl W. Thompson, "Social and Economic Survey of a Rural Township in Minnesota." Lewis H. Haney and George S. Wehrwein, "A Social and Economic Survey of Southern Travis County, Texas." Paul S. Pierce, "Social Surveys of Three Rural Townships in Iowa." George H. Von Tungeln, "A Rural Social Survey of Orange Township, Iowa."

⁴ E. V. White and E. E. Davis, "A Study of Rural Schools in Texas." C. C. Sargent, "The Rural and Village Schools of Colorado." W. H. Allen, "Rural Schools in Wisconsin."

Health surveys are just starting with expert investigators behind them. The units of measure are so well standardized that rural health studies may be looked for in increasing numbers.

Many rural community surveys have been attempted, but very few have been published. A community survey of tenancy here and there has shown the way to specialization in the study of farm life.¹ Interesting school district surveys have been taken by country children and teachers. Several analyses of counties into communities by a process of survey have displayed the close relation of farm life and village, town, and city institutions.² Beginnings have also been made in tracing out county government budgets to locate the effectiveness of official service in the county form of government.³

A cooperative plan of national research. Country life has justified itself by these initial studies as a field worthy of investigation. These surveys, although made in limited areas of the United States, and carried on without regard to concerted action, have proved stimulating and have awakened the hope that a national plan of research may soon be set in motion. The pressing need now seems to be for a determination of the most significant problems which are susceptible of study in the life of our farm populations. These problems should be stated in standardized form, and then more or less uniform methods of study should be agreed upon for general use.⁴

A federal bureau of country life research would facilitate the adoption of standard problems, methods, and a concerted movement nation-wide.

The United States census of population. To know the movement of populations is a desideratum from many points of view. Heretofore the census has given us two main classes of population, the rural, the urban. The urban population, broadly

¹ Agricultural Experiment Station of University of Wisconsin, Research Bulletin 44, "Farm Tenancy."

² C. J. Galpin, "The Social Anatomy of an Agricultural Community."

³ E. C. Branson, The University of North Carolina Record, September, 1917.

⁴ Rural Sociology Committee, "Standardization of Research," *American Journal of Sociology*, November, 1918.

speaking, has included all persons living in incorporated places of 2500 people or more; the rural population includes all persons living outside urban territory. The movements of the population engaged in agriculture have not been a matter of plain scientific disclosure by the census, but rather an estimate wrung from the classifications "rural" and "urban." All the figures on "rural decrease" of population and on the gradual but strong migration of "rural" people toward cities fail to give the exact facts about people living on the land as land workers. It is futile to build up permanent theories upon the movement of farm population until we have census data upon farm population as clean-cut as we possess about the population living in cities of 100,000 people.

If the census could classify our population under three heads, namely, city population (setting up a standard of population for a city), village population (setting up a standard of population for a village), farm population (population living on farms), we would have the basis for a scientific calculation of population movements, and we should begin to know exactly about "decreases" and "increases" and direction of "migrations" of our land dwellers. It would be a source of valuable knowledge on farm problems, moreover, to be able to discriminate village population from farm population. The relationships between village and farm require this discrimination, rather than the merging which we have at present.

Village problems on the human side are quite distinct from farm problems. In fact, village psychology, village institutions, village government, village abnormality, and the like, justify separate research methods and separate treatment.

The census should become the great basal source of research in country life problems. And it will take its place and function in this respect just as soon as the foregoing threefold classification of population is standardized. Then a series of tabulations on literacy, illiteracy, age groups, color, nationality, sex, marital conditions, in respect to each of the three classifications, would give the initial materials for further research.¹

¹ C. J. Galpin, "Rural Life," p. 359.

Reorganization. The country life movement is now at the stage of reorganization. Old institutions are being subjected to close inspection with a view to adapting them more perfectly to present conditions. New institutions are being proposed to give a better channel of life to the farming group. Methods of rural organization everywhere occupy the center of attention. Some urban institutions, likewise, are in process of adjustment to newly recognized rural relations. Economic problems of the farm in some cases wait upon the reorganization of the institutional life of farm and town. A survey of the problems of organization will disclose to a close observer the profound character of the attempt thoroughly to organize the human side of farm life.

The farm household. Family life in the farm household at once engages the thought of those who would modernize living conditions in the country. A general opinion obtains that the American farm family is restless, no sooner getting settled upon a piece of land in a community than it opens the doors to floating suggestions of a better farm, a more favorable community, a more congenial climate, elsewhere. Not that out-and-out endeavors to shift from farm to farm are started; but that the American farm family always views shifting as within easy range of the possible. So owners of farms in America are not viewed as rooted and grounded in any particular community to be transplanted with the same difficulty as a massive oak. Farm tenants, moreover, are proverbially mobile, shifting, cutting and trying from farm to farm, and from community to community.

To this instability of the American farm household has been ascribed the undeveloped character of rural institutions. If all farm families, even the leading ones, are shifting, then permanence, long-time policy, lavish attention, are impossible in behalf of the institutions and organizations surrounding the household. How to stabilize the farm home, therefore, without rendering it immobile, is a problem of the first class, possibly incapable of solution until tenancy shall have received prolonged coöperative study and shall have been taken up more elaborately

into public policy. A hope exists that tenant shifting may be much decreased by a simple knowledge of the social forces at work, and an application of methods of social control.

There is a suspicion, moreover, that instability in rural family life may be related somewhat to the ideal of "getting on" materially, or as the farmer views it, "getting out of debt." The mortgage on the farm is the strong bond of household partnership. Every one works to burn the mortgage; every-one, moreover, overworks; and even if an actual obsession does not completely control the whole family, too often so large a preponderance of attention is given to production, profits, savings for the mortgage, that the home spirit is driven from the fireside. Deep sentimental attachments to the house as a human habitation, to the farmstead as a spot sacred to the anniversaries and traditions of the family, frequently do not develop.

When the mortgage is burned, the work bond is broken, the compelling motive is withdrawn, and the family is susceptible to new ideas of speculation or of a premature retirement from an overcrowded economic life. If it has not been completely smothered in the days of debt paying, the home spirit may arise from the ashes of the mortgage, and new life may come to all the inmates of the home, and life as a goal may be counted more valuable than the material basis of producing. The new spirit will gently lead the human beings where the old ideal whipped the toilers to the field. When the mortgage bogie is once driven from the American farm household, a calmer spirit of stability, a firmer attachment to the spot where life is lived, will ensue.

The mortgage bank with long-term loans, fair interest rule, and very gradual payment of the principal, will do much to drive away the "get out of debt quick" specter from the soul of the farm home. Life, human life, then will more and more become the motive of country living.

The problem of the farm household will not be solved until there appears among its members an appreciation of the finer things of life. This needed appreciation will come increasingly as the farm housewife is freed from drudging toil, as the farm

child is allowed to get in touch with a larger cross section of life, and as the farm father grows to feel on easy terms with the business men of his community.

One strong influence leading to hope and appreciation in the home will be a policy of screening off from the house and home view, with objects of beauty, the more vulgar aspects of farm work, necessary as they may be. Walls, trees, hedges, vines, have always been used as screens, more or less, about the house. A public policy to this effect would make the practice more general. All pictorial representations of farm life in advertisements, in books, in magazine articles, in wall decorations, would do a service to the life side of the farm household if they were to put forward the best, the ideal indeed, rather than the common realistic instance in posture, garment, gait, and use of hand implements.

There is one reservation to be made in regard to the reorganization and socialization of the farm household. America will demand that no scheme of organization of the farm home shall endanger the stamina of the farm family as a basal unit of the nation. No social progress would be worth while at the price of a weakening of the family tie on the farmstead. The final statement, therefore, of the farm household problem is how to give the farm family the higher goods of life in much larger measure, and how at the same time without fail to maintain the present bond of virility in the family unit.

The neighborhood. Family life in the country is environed with neighbors. As in biblical history, the drama of life on the farm is played by father, mother, sons, daughters, servants, and neighbors. The neighborhood is a unit of loose organization. However, its bond of cohesion, racial, topographical, or institutional, is usually very real and admits of tightening. "Good neighbors," "accommodating neighbors," "neighbors you can depend on," are phrases which indicate the tie of organization. "Gossipy neighbors," "slippery neighbors," "rough neighbors," indicate a deficiency in organization.

The fact is that scientific farming needs neighborhood spirit, enterprises, and mechanism of organization. Technical co-

operation depends upon neighborliness, and good neighbors. Common policies with respect to the territory of the neighborhood, the institutions of the neighborhood, the roads of the neighborhood, imply a degree of intensive organization.

The problem of organization of this territorial unit which stands above the farm household involves, first of all, a somewhat official or at least standardized recognition of neighborhoods in the county. In fact, investigation is very much needed at this point in order to locate these population groups which are not bounded by statute lines. A map of a county containing all the neighborhood groups discoverable would go far toward clearing up and making standard this unit. It is quite probable that the neighborhood population group, which has the flavor of spontaneous choice about it, is one of the most important groups for organization and social utilization in farm life. How shall this unit be integrated into modern rural county organization? Is it most naturally a school group? A co-operative group? A farmers' club group? A neighborhood house group?

It is perhaps idle to let the fancy go upon this problem without considerable study of the social texture, psychology, and economics of the neighborhood. Very little as yet has appeared, either in literary or survey form, upon this feature of farm life. Some few settlements, school districts, villages, some few mountain clans, have been described; enough in fact to substantiate the claim that every county is packed with socio-economic population groups of this character. It is greatly to be desired that some responsible investigating agency should give us a study of some county and make such an analysis as will etch the neighborhood group into our geographic sense. Not till this study has been made can the problem of organization even be stated.

The business community. As the farmer becomes increasingly a business man, it is of growing importance that he should be a recognized member of some one business community. Business is interlocking. The mercantile business, the manufacturing business, the farming business, are fit subjects for

closer mutual organization, but from the point of view of country life, the first essential is that the farm shall be unmistakably linked with a particular local community of business enterprises. The farmer needs the *esprit de corps* of business associates, not only in farming, but in the other lines of business throughout his local community.

From being a solitary seller of farm produce and buyer of the raw materials which enter into his farm products, to being associated with the farmers of his neighborhood in selling and buying, is a considerable step; but this sort of business association falls short of ranging oneself with the business men in general of a considerable village or small city trading center. The farmer's kind of business is worthy of being represented in the local business group. The modern farmer is personally worthy of this association. Moreover, the community of business in town and on farm has a unity of purpose, territory, institutions, ideals, which logically demand that every farmer of hope recognize himself as a member of the business group and assume all the responsibilities of his common business citizenship.

The time has passed when a modern farmer can evade his local responsibilities as a business man with the plea that he can go to several trading centers at will, for he can and should choose his main business center and business associates. The time, also, has gone when the mercantile and professional business men of a village or city can ignore the outlying farmer as a community partner in business enterprises on the ground that he is not a voter in the village or city. The right attitude of farmers and townsmen is based upon the fundamental fact that most villages and small cities in America have fixed agricultural land bases, and that farm and town belong to each other.

The problem of reorganization of the business life of the farm involves on the social side the distribution of American population into rather definite population groups of town and territorially associated farms. The sooner a farmer knows his business groups and stands loyal to his group, the sooner a community spirit will arise which will react upon the farmer's

habits of life and thought. A great service remains to be done through some sort of official mapping of these community groups. Whether a closer legal relation, such as some form of municipal government, will ever obtain between the territory of farm and adjacent town, it is premature to surmise. The feud between farmer and townsman, although of long standing, in fact dating back as far as the independent stride of the one, and the suave speech of the other, is not without its history of truce and honest endeavor to come to terms of community understanding. The endeavors of many commercial clubs, boards of commerce, business men's associations, town and country clubs, to bridge the gap between town business and farming furnish grounds for the belief that some general and final agreement will prove mutually satisfactory.

Educational institutions. If real hope is to enter country life, considerable reorganization of the rural channels of education will be necessary. Some expansion in their ideals of education will need to come to farmers. There will be required also on the part of townsmen some recognition that education, high as well as low, is a legitimate privilege of the country dweller. Some further adaptation of educational curricula to the vocation of farming will have to be made. In fact, if the farmer's family is to be a candidate for a life of culture, refinement, and skill, the doors to right training must be opened wide, and this means schools, large schools, high schools, vocational schools.

The problem of schools, — that is, the problem of leading children into the world's experience before the child has had his own experience, — is wrapped up in the whole problem of the social side of farm life. Not until the farmer has some abatement of his timidities and senses his ability to use large units, will he rise to the ideals of education for his children. Not until he gets over the feverish obsession for clearing the debt off the farm, and substitutes life as a goal, will the farmer come into the full fruition of this educational hope. When the household régime is enriched by a neighborhood régime, and this is supplemented by community organization, education will presumably receive a large impetus.

The deficiencies of the country school have been generally perceived, and the remedies are fast being applied. One question, however, still remains unanswered: whether the larger country school of the consolidated graded type shall be organized with little regard to the larger community of business, or whether it shall be an integral part of a community system, leading up to a community high school offering vocational courses. Perhaps this undetermined question is fundamentally a problem of democracy, and may be stated thus: shall the farm child grow up in an educational democracy, or shall he be trained in a group of farm children, somewhat aloof from the children of tradespeople, artisans, professional people?

It may be that the country school which shall be organized with respect to natural population grouping will be found to be a school of large neighborhood, and contain only, or quite largely, farm children; but it may also be found that it is wholly within one business community, and is correlated with a local community high school.

The problem of educational organization will have one important question to determine, namely, whether the farmers' high school shall be apart in the open country, or whether it shall be democratic and be located in a town center. Both farmers and townsmen are parties to this problem. The nation demands workable democracies; but it also demands that each class of workers shall be so protected that neither they nor their work shall suffer. If a democratic high school can be operated so as to be fair at every point to farming as an occupation, and to farm people as a class, then a high school in town will be no more objectionable than a bank in town. But if such a high school shall act practically as a sponge to take up the children from the land and squeeze them into the city for life, then a high school in the country will be the chosen alternative.

Business institutions. How far can the farm get on without the traditional mechanisms of economic exchange? Is the retail town a necessity for farming? Or could farmers better do with the mechanisms of a metropolitan trade center, mail agencies, parcels post, express, freight? These are questions

which arise for academic debate, and many farmers act in their trade as if they had come to a decision in the matter. Are new mechanisms of trade required to displace the retail store of the town? Should farmers band together in buying and selling? How completely should this policy, already tried a little, be applied? Should there be farmers' mechanisms for selling, but not for buying? For selling all their products, but for buying only such raw materials as enter into their agricultural product? Could the community trading town compromise with farmers in trade matters to this extent, that it would agree that farmers should operate in town selling exchanges, shipping agencies, produce exchanges, etc. on the condition that the farmers' buying agencies would deal only in articles which enter into the agricultural product, such as lime, fertilizer, seeds, feed, farm implements, etc.? Under the latter plan, the town retailers would furnish at retail all domestic goods, clothing, household furniture, groceries, meats, jewelry, etc. Would this be an equitable bargain between town and farm?

These are some of the questions of organization of community farm business. Experimentation is going on continually with all kinds of trade arrangements and trade mechanisms. It should be remembered, however, that the social side of farm life depends upon community spirit, good will, democracy, institutions, loyalty. The winning of the struggle to achieve economic freedom and national coöperation among farmers should not be construed by the farmer as a release from the civic and social duties of community life. The problem of business institutions and mechanisms, therefore, resolves itself into the devising of ways and means for building up community life through a system of integrated social channels and mechanisms of business.

From this viewpoint, the farm bureau shows promise of developing the educational, agricultural, and business interests of farmers, and preserving lines of community loyalty in a county. When the farm bureau shall be completely incorporated into county government, so that the electorate of a county has control of the policy of the bureau as fully as it has

control of education in the county school system, then permanence of organization will give chance for a democratic development of the principles and methods of farming.

Even though it is difficult for the farmer to have a primary interest in the educational side of farm bureau work, only a slight shift of emphasis need be made among the objectives of the farm bureau to put the educational and social features into a position of favor. For example, the farmer will always have to sell his product. His interest in marketing, therefore, is permanent and continuous. Suppose the farm bureau commission of the county, elected or appointed, make selling of the county farm products a primary objective; creating the necessary voluntary shipping associations; relating the products of every community to these associations; then every farmer in the county would become interested in the farm bureau. It would be an easy step, then, from selling to the formulas of agricultural production. Standardization of quality and the methods of high yields would then be logically related to the farmer's prime interest. Social projects, clubs, roads, fairs, fêtes, would follow these other interests. It remains for some organizing genius to work out first the business mechanism of the farm bureau idea so as to relate it to the electorate of a county; secondly, to make marketing a primary object; and thirdly, to correlate government extension service, both educational and social, with each community.

Social institutions. The bright things of life which produce the happier moods, the pleasant emotions of contrast, variety, and the like, have often been mentioned as lacking in country living. The tail of work is always attached to the farm kite of play. Writers have become accustomed to load the odium of many other defects upon this outstanding trait in rural character. "Bring about recreation, amusement, the wide and frequent contact of personalities in country life, and," it is said, "farm life will be rehabilitated."

We have by this time found out that country life, and labor, are by no means without their own manner of complexities; and that these complexities are by no means set in sequence

like ten-pins. The problem is not to knock down one pin and see the others tumble. Rather, country life is a fabric, all elements interwoven, the whole hanging together. It is a long, arduous task to remake the fabric. It is no easy matter to bring social pleasures within the pale of country living, and cause the whole of life thereby to be quickened. But the problem of social institutions, however difficult, must be faced, sooner or later, in order that the more genial side of life may have its rightful chance in country living.

Larger schools, providing age-groups of children who possess similar experiences, ambitions, and joys will start institutions for recreation. Farmers' clubs, junior clubs, young folks' clubs, are good agencies to give the initial impulse toward permanent forms of recreation. Home-made entertainment will always prevail in the country, and a modicum of organization of the younger persons will result in social enterprises.

The present wide-spread impulse to build neighborhood and community houses will, it is hoped, materially accelerate the coming of the lighter and brighter things of country life. It is to be hoped that in our larger towns the Y. M. C. A. and Y. W. C. A. buildings, especially their gymnasiums, may be open for the use of near-by country youth, and that the plan of interchange of hospitality between groups of young people in town and country may be widely adopted. High school pupils and teachers in a town high school have the opportunity of setting the fashion in the larger community of exchanging hospitalities with country schools. Municipal club-houses and theaters have already been successfully managed for town and farm people. Community fairs, too, have taken high rank as rural social institutions.

The real problem of rural social institutions, after all, is to discover natural population groups, and then find out how to create the mechanism for democratic recreation within a whole group.

Religious institutions. The modern view of rural progress had some of its first apostles among those interested in the country church. The threatened decadence of church life,

if not of religion, in the open country, startled church leaders. So earnest has been the endeavor to meet the rural church problem that the several national religious bodies have created a department of church and country life, with a secretary or superintendent. A staff of rural church thinkers has been formed. Very positive plans to study the country church, to re parish the farm population, to provide noble church edifices and comfortable parsonages, to organize church congregations for social service as well as for social religion have been set forth. The auxiliary societies of the Y. M. C. A. and Y. W. C. A. have undertaken the work of training for rural leadership in county after county. The Federal Council of the Churches of Christ in America has its commission of the church and country life, which is entering upon a vast plan in connection with the Interchurch World Movement to survey the rural churches of America.

No other type of farm institution has displayed so patently as the church the maladjustments of human life on the farm under the stress of a national tide flowing cityward. It is not strange, therefore, that the first questions were about the decay of the rural church. Not strange that all sorts of proposals and remedies have been made to improve the condition of country churches.

An important problem of the church for farmers is undoubtedly connected with the question of permanent agricultural population groups. A church in order to function must be in a natural population group. But a far deeper problem than this presents itself. Churches in modern times must reach a certain minimum strength in order to succeed at all. This minimum strength is at present frequently never reached by individual churches. How to guarantee the irreducible minimum strength to each country church amounts to an enigma. In solving this problem, moreover, some arrangement must be arrived at among the national religious bodies by which a process of give and take, carried out with scientific interchange, shall enable these country churches to come up to standard membership. There are many indications that the

national leaders of different denominations are not only alive to the case as a problem of academic importance, but that they are determined, both from motives of national patriotism and from motives of a deeper spirit of Christian concession, coöperation, and unity, to work out a solution.

Health institutions. An inspection of the hospital records in small cities will in certain sections of the United States disclose a surprisingly large use of hospital facilities by near-by farm families, especially in surgical cases. The hospital, general and maternity, should doubtless be extended into rural territory for common use.

The country nurse is proving a welcome visitor in rural schools and communities, and bids fair to become the founder of an institution. If the Red Cross Association could be persuaded to take over permanently as its "after the war" field of activity, the rural sections of the United States, and become an agency for rural health and home service, the rural health problem would practically be on the road to solution.

Governmental institutions. One of the largest rural social problems pertains to the local government of farm population. The forms of government now prevailing in townships, counties, magisterial districts, and parishes, should be inspected and refitted to modern conditions. Reorganization is needed. Very few attempts have been made to take the primitive tools of rural government and replace them with machines for social purposes. A commission in every state appointed to study local government and present amendments would help solve the problem of rural governmental institutions.

Here is where the farmer should be presented with his chance to have a democracy if he so desires. New England already knows the values of a township democracy of farm and village or farm and city. Perhaps other sections of the United States are ready to amalgamate farmer and townsmen in some form of local municipality. If the farmer, however, shall prefer a municipality made up of farmers alone, even then, contrary to general belief, considerable reorganization will be necessary in order to give him the right population group of farmers for

strong local government. The present territorial units of rural government, so far at least as they concern farmers, are, on the whole, deficient in social cohesion. So reorganization will be necessary under whichever theory prevails, — democracy of farm and town, or detached farmer municipality.

The farmer is ready for a set of governmental powers which shall enable him to accomplish in his own group what cities are enabled to accomplish by charters for their population groups. There should not be a period of long waiting until the farmer demands this reorganization himself. The nation needs this rural reorganization. This is demand sufficient for thinkers and statesmen.

Theory of organization. Social organization will proceed as has been indicated upon one of two theories, or upon a compromise between the two. These two opposing theories should be plainly known and reacted to.

The first, and it is the traditional theory, is that farm life, so far as possible, should for whatever purpose be organized by itself, aloof from the people of other industries, professions, or trades, who for the most part live in cities and villages.

The second theory, and this is of recent origin, is that farm life is only a part of national life, and more like than unlike all the other parts, and should for democracy's sake be organized along with these other parts within a natural community population group. Just as the nation is a thorough-going democracy of all kinds of occupations, represented in Congress and public offices; just as the state is a pure democracy of farmer, industrialist, and professional, so the local community should be a pure democracy. How a compromise may be effected, combining the principles of detached farm life and a pure democracy, some communities can already show.

Rural legislation. The signs of hope for country life are seen to advantage in recent attempts to put into statutes freedom of action and power for farmers to employ the taxing device and other modern social instruments. County agricultural schools figure among the early endeavors to give privilege to rural folks. The county nurse is likely to become man-

datory upon counties. The introduction of mounted state police, as militia for the protection of open country populations, having given demonstration of usefulness in a few states is being encouraged in legislatures of other states. Electrification of township units seems likely to raise up a rural utility under municipal control. Village and city rest rooms for country people coming in to trade have become compulsory in one state. This plan has its angles of interest and suggestiveness; the village or city must appropriate a certain amount of money for rest-room maintenance, whereupon the state adds a like amount.

Road legislation, frequent and even startling, is recognizing more and more rural population groups. The trunk line idea, however, good and fundamental as it is, needs to be linked up with the community roads plan, whereby the retail trade population of villages, towns, and small cities are integrated and their institutional purposes are facilitated. It is not too late in the newer sections of the United States for legislation to encourage the establishment of "residence roads," that is, the selection of certain favorably situated roads pertaining to a particular trading center, upon which most of the farm residences of settlers shall be located. Residence roads would save much mileage of highly surfaced roadway, bring farming people into closer neighborhood contact, and facilitate school transportation, and other institutional development.

Redistribution of rural routes. The farmer appreciates his postal service; in fact he appreciates this daily delivery of mail so much that he is slow to complain of any flaws in the present system. One defect, however, sooner or later he will point out. Just because he is becoming a business man along with a particular group of business men located in and around a particular business center, he is going finally to object to having for his mailing address, a little town or hamlet to which perhaps he seldom or never goes. A closer application of the principle of integrating the farmer with his own natural population group will be requested of the government in distributing the rural routes.

One of the latest movements in country life legislation pertains to the creation of new types of territorial districts. The legalizing of consolidated school districts, in shapes fitted to topographical conditions; and the forming of high school districts which unite village or city limits to surrounding farm territory for an educational democracy are among the efforts of rural life to stretch its boundaries in order to accommodate its expanding institutional consciousness.

New types of municipality. One state has actually empowered its rural people to create a new type of rural municipality out of any number of school districts. This statute stands as a weathervane, showing the way the wind is blowing. A desire for an easier position, for a better attitude for working together, for a broader base for social operation and for selection of the right people to cooperate with,—this is the meaning of the uneasy twisting and wriggling of rural populations.

In another state, villages have for many years been enabled by law to build and maintain by tax a community house; likewise cities; also the rubber-stamp square townships. But certain farm population groups lying in parts of two or more townships also desired community houses. So a bill was framed and introduced into the legislature, permitting parts of townships to be formed into a municipal district for the building and maintenance of a community house; not only parts of townships, but parts of townships along with a village or city; and even a ward of a city alone, or along with parts of one or more townships. The only requirement is that the territory shall be compact, at least sixteen square miles in area, or containing a population of at least 500 persons.

Rural planning and land policies. "Rural planning" is a present popular subject for debate in legislative halls. A state commissioner of rural planning and county boards of rural planning form the heart of the program. The commissioner of rural planning should be a specialist on the æsthetic side of country life. He should see the streamside possibilities, the country park sites, the scenic effects which could be worked into the highway system. Standards of landscape beauty for

public and private use would be the outcome. These things will without doubt eventually be provided for in statutes. Land policies of great scope and influence upon country life are bound to be more and more the subject of legislative enactment.

Legislation, if well considered, will rest upon investigation, study, research. It is a very hopeful sign that an American Association for Agricultural Legislation has been formed, to furnish an impetus toward legislative study, publicity, and wise enactment of law. A fundamental doctrine of true population grouping seems needed most of all. Following this, surveys may establish the location of these groups. Institutions will thereupon spring up within these groups, and relations will be established between group and group, making it possible for the farm population to be connected vitally with the currents of national life and progress. Hope, culture, and privilege will thus follow freedom and the instruments of freedom.

CHAPTER XXX

METHODS OF STUDYING AGRICULTURAL ECONOMIC QUESTIONS

IN the preceding chapters it has been assumed that the farmer possessed the knowledge essential to the passing of judgment upon the relative profitableness of crops, the best method of disposing of crops, the choice of livestock enterprises, and the choice of agencies of production with respect to kind, quality, and the amount of each. A perfect knowledge on these points will never exist ; the problems to be solved always involve the future with its unknown factors to lend uncertainty. It is true, however, that a better knowledge of past results and present conditions add greatly to the accuracy of judgments regarding what to do in managing a farm or in planning legislation affecting agriculture.

Our knowledge of the character of economic forces comes through reasoning based upon the available facts. In economics as in other sciences, the work of the student consists in gathering facts, sifting and classifying them, formulating hypotheses, gathering more evidence with which to test the tentative conclusions, until all the relevant facts have been considered and the correct conclusions drawn. Through these processes it should be possible in time to approximate the truth regarding the operation of particular economic forces. But the economist is never certain of having considered all of the facts, and he is ever hoping to formulate a new hypothesis which will more completely explain the evidence in his possession.

Theoretical work in general may be divided into two classes, the sterile and the fruitful. The sterility of the theories of the one class is usually due to failure to see the problem in its entire setting. The conclusions are sterile, as a rule not because of

illogical thinking, but because the premises are incomplete and the conclusions therefore erroneous. The fruitfulness of the other class of theories is due to the fact that they are in harmony with the facts and become a guide to the mind in comprehending the direction and strength of the forces with which the practical man has to deal and hence increase the accuracy of his judgments regarding the probable conditions of the future with which he has to make his present actions harmonize.

The danger of holding to half truths is very great in the field of economics. The forces involved are so numerous and the facts so scattered that even the most careful student is in danger of placing too great reliance upon a premature conclusion. And yet practical men everywhere are constantly dealing with economic forces. Day after day they are passing judgment on the future action of these forces. Practical business men often show a clearer grasp of the operation of economic forces than do the economists of the chair. This is because the business men are dealing directly with these forces.

The student must study economic forces in operation if he would understand their character. The world of economic activities should be the laboratory of the economist, and the records of these activities should constitute his library. The success of the student depends equally upon his ability to gather data and his ability to draw correct inferences. It may be true in some subjects that a person who is not capable of drawing conclusions will be able to work independently and contribute to the subject by gathering data which others may use, but in the field of economics the problems are so complex that in order to secure valuable results the two processes must be employed simultaneously. No student should undertake independent research work in economics who is not a good logician. He must be capable of correct reasoning. He must be capable of drawing the right inference from given facts and of remembering the limitations of the basis of his reasoning. When a working hypothesis is formulated, it should be looked upon as a means to an end, not as an end in itself. In other words, he must be capable of independent work in the field of economic theory.

Possessing this qualification, the student should devote most of his time to gathering data which may form the basis of generalizations regarding the character and operation of economic forces.

There are many ways of securing information on which to base judgments on economic questions relating to farming. The farmer learns from his own experience. He observes the activities of others. He talks with his neighbors about which crops pay best, which methods of disposing of crops pay best, the proper wages for hired help, methods of renting land, and every other question which may arise from time to time. This accumulated knowledge is of very great importance to any farmer coming into the neighborhood to take up farming.

In recent years personal and neighborhood experience has been made more available than formerly by means of the farm survey method of studying local farm management problems. The farm survey has stimulated farm bookkeeping, which has in some instances developed into a detailed set of records complete enough for cost-accounting purposes. These methods of studying the individual farm and the farming of a region give valuable information regarding what is being done, the ways in which things are being done, and the financial results which are being secured. The important questions which are left unanswered by these methods of study are: Why is the present system profitable or unprofitable and what are the reasons for believing that some other type of farming may or may not be more profitable? To secure a basis for passing judgment upon questions of this character it is necessary to have in mind the conditions of agriculture and the demands for agricultural products in the entire competing territory of which the local region is a part. In order to secure this broad grasp of the economic forces which determine what pays best on the individual farm and for the nation as a whole, it is desirable to make an historical and geographical study of the economic forces which have been and which are in operation throughout the competing territory. After all other methods have been exhausted the experimental method may have to be resorted

to in order to secure some of the results desired. It will be worth while to describe some of these methods of study briefly in order to illustrate their use.

Farm accounts. Every farmer should undertake to keep some record of his work. If he is not much inclined to figures and feels that he does not wish to undertake anything more, he should take an inventory once a year. A farm inventory is a complete list of all the farm property owned by the farmer, a list of his indebtedness, and a list of the bills payable to him. All the items in the inventory are valued at the time of the inventory. By comparing the value of property at the beginning of the year with that at the end of the year, the farmer knows how much he has gone ahead or fallen behind during the year.

Many a farmer has thought he was doing well because he had plenty of ready money, only to find himself hard pressed for funds a year later. For a short time the farmer can take in money faster by selling cows than by selling milk, but in the year's balance he may have lost heavily by this course.

The following summary of an inventory and financial statement will help one to understand the use of this class of records:

TARPLEYWICK FARM

Summary of Inventories, March 1, 1915-1916

<i>Real Estate</i>			
	1915	1916	
I. Land	\$19,675.00	\$19,675.00	
II. Buildings	4,739.06	4,649.61	
III. Water System	167.25	201.50	
Total Real Estate	\$24,581.31	\$24,526.11	
<i>Livestock</i>			
IV. Horses	\$ 1,015.00	\$ 930.00	
V. Cattle	3,760.00	6,090.00	
VI. Hogs	105.00		
VII. Poultry	36.00	37.50	
VIII. Sheep	18.00		
Total Livestock	\$ 4,934.00	\$ 7,057.50	
IX. Produce, Seeds, and Feeds	\$ 1,273.86	\$ 1,534.78	
X. Miscellaneous Supplies	264.90	\$ 281.90	

	<i>Equipment</i>	
XI. Horse Equipment	\$ 136.35	\$ 111.00
XII. Cattle Equipment	143.10	130.20
XIII. Poultry Equipment	1.20	
XIV. Horse and Power Machinery	1,119.20	991.85
XV. Miscellaneous Equipment	183.50	165.55
XVI. Carpenter's Tools	30.00	20.00
XVII. Farm House	68.00	62.00
Total Equipment	\$ 1,681.35	\$ 1,480.60
Total Farm Property	\$32,735.42	\$34,880.89
Increase in farm property	\$ 2,145.47	

The first task in taking an inventory is to list and to give an accurate statement of the quantity of goods on hand on the date for which the inventory is taken. The quantity of grain in a bin, the amount of hay in a mow or in a stack, etc., should be ascertained with great care, using the standard measurements.

The livestock should be itemized one by one by classes as to kind and age, all larger tools and machinery should be listed, but small tools may be lumped as garden tools, carpenter tools, etc.

Basis of valuation. The valuation of the goods listed on the inventory is the next important task.

Is market price the starting point for valuing each piece of property listed in the inventory? "At what price shall I inventory the oats grown on the farm last year, and at what price shall I charge them to the dairy-herd accounts?" The answer to this question is not so simple as one might desire. The object of the oats account is to know whether to grow oats or some other crop requiring attention at the same time of year. The object of the dairy-herd accounts is to know whether to be in the dairy business or something else. There are at least two prices at which the oats may be inventoried. The oats may be valued at the local market price minus the cost of hauling them to the market, or they may be valued at the local market price plus the cost of hauling them from the market. Which of these values to place upon the oats, depends upon the circumstances at the farm. If the farmer is an oat producer who

sells a part of his oats on the local market and is trying out the dairy business on a scale that makes no demand for purchased grain, it may be perfectly proper to value the oats at the local market price, minus the cost of marketing. This is justified on the ground that it gives the farmer the correct basis for comparing the relative profitableness of oat production and other competing enterprises; on the other hand, if the farmer is a dairyman who makes demand for large quantities of grain beyond what he is in a position to raise, the oats may properly be inventoried at the market price plus the cost of hauling the same amount of oats or other grain from the local market. This is justified under these conditions on the ground that in considering the relative profitableness of growing oats and doing something else with a part of his time, this higher valuation is the one the farmer must use in determining what it pays him best to do. Furthermore, when calculating whether to increase or decrease the grain ration fed his herd, or whether to feed oats or some other feed, this higher price is the one which should be made the basis of the calculation so long as the dairyman is a buyer of oats or substitute feeds. Where the dairyman is a seller of oats, the problem is different. He then needs to figure on the basis of market price minus cost of marketing, in deciding how many cows to keep and how generously to feed them.

Yet another condition may call for still a third basis of valuing oats. A farmer may find it profitable to grow oats to feed his cows, yet he may not find it profitable to grow oats to sell, nor to buy grain to feed the cows. This may be owing to distance from the market, or to various other causes. In this case, it may be as well to throw the two accounts together and charge the cows with the cost of producing the oats. The basis of determining whether to grow oats or do something else, then becomes a matter of comparing the costs of the different methods of getting cow feeds. This is probably an exceptional condition, and the question of using cost as a basis of valuation is not looked upon favorably, excepting where conditions rule out the market factor and put the dairyman on a self-sufficing basis, so far as dairy feeds are concerned. The disadvantage of using

costs as a basis of valuation is that it balances the account and carries any loss or gain over to the next account, thus blending the profits of two or more enterprises, which is contrary to the aim of cost accounts, and reduces the system more nearly to the basis of simple bookkeeping which shows the profit of the business as a whole.

Valuation of ensilage. Ensilage is a feed which rarely enters into commerce. True, it is sometimes sold at a sale and farmers have sometimes sold ensilage by the load to their neighbors, but in general ensilage is made for the exclusive purpose of feeding it on the farm. The question then arises, How can market prices be brought to bear in placing a value upon the ensilage? One method which can be used successfully is to start with the price of corn on the local market, subtract the cost of husking the corn and hauling it to market. The corn value thus obtained plus the value of the dry stalks in the field may be the basis of valuing the standing corn in the field at the time when it is cut for ensilage. To this should be added the cost of harvesting the corn and putting it in the silo. The storage costs, including interest and depreciation upon the silo and shrinkage, must be added in order to have a complete basis of valuing the ensilage. This may be called an opportunity cost, but differs from actual cost in that it leaves the same amount of profit in the corn account as would have been secured by producing corn for the market. It also gives a rational basis for charging the ensilage to the dairy industry, since the cows must be able to pay at least this much for the ensilage in order that the farmer can afford to produce ensilage instead of market corn.

Valuation of hay. The valuation of the hay in the mow or in the stack presents a series of problems. Should the farmer use cost of production or the market price as the basis of valuing the hay? It is a well-recognized fact that if all the farmers in a given dairy district should decide to sell their clover hay instead of feeding it to cows, they would find the market price dropping to a very much lower level than during the time when they were feeding most of their hay, some of them selling and some of them buying hay. In the district where some hay must be shipped

in to maintain the dairy herds, it is obvious that the local market price of hay, plus the cost of hauling the hay from the market to the farm, is the basis which should be used in calculating whether or not it pays to grow hay, also the basis for calculating whether or not to increase or decrease the number of cattle kept. This then would seem to be the correct basis of valuation of hay on hand at the time of taking the inventory. On the other hand, if the farmer's condition is entirely different — if he is raising hay for the market and finding it profitable to make demand for only a part of the hay in the dairy — he may use market price minus the cost of putting the hay on the market as a basis of valuation and as a basis of calculating whether to grow more hay or keep more cattle. For many farmers cost of production may prove a practical basis for valuing clover hay. Taking the country as a whole, clover hay is a farm feed and has little market except for cattle and sheep feed. It is usually produced as an adjunct to the livestock industry and yet it is a soil builder as well as a feed for livestock. The other crops which grow in rotation with clover benefit greatly by its presence in the rotation. The livestock furnish the avenue through which to market the hay. For these reasons it would seem correct to credit the fields and charge the cows with the specific production cost of the clover hay and return the resulting fertility to the field without charge to the field or credit to the cows. Where this view is accepted, clover hay will be inventoried at cost of production.

Valuation of livestock. In appraising the dairy herd and taking the annual inventory a value should be placed upon each animal in the herd. If a cow has been purchased recently it is proper to inventory her at the cost price, because this is presumably the market price. If a cow has been on the farm for several years there may be some question regarding the price at which she should be inventoried. Obviously the price for which she would sell upon the date of the inventory seems to be a fair valuation, and if the whole purpose of the inventory were to ascertain the worth of all the farmer's assets, this would be the correct basis of valuation.

The inventory may be taken for either or both of two purposes: To ascertain the farmer's present worth, or to balance his accounts and ascertain the profit of his annual operations. Where the object is to ascertain the profits of operation during the past year, each animal in the herd should be valued on the basis of the previous inventory and marking down or up according to the depreciation or appreciation which has taken place during the year. Where the farmer is keeping his herd year after year without expectation of using up the cows in the dairy business, this would seem to be a satisfactory basis of making the inventory. If it is possible, however, to use both bases, place two values after each animal, one based upon last year's inventory plus depreciation or appreciation, which will give a basis of showing the results of the year's operation; the other is to place a value upon the basis of present market prices. The difference between the sums of these two sets of values will show the gain or loss during the year due to fluctuation in prices.

Valuation of machinery. Machinery which has just been purchased may be valued at the cost price. The value of a machine which has been used for one year should be reduced from the cost price by the amount of its normal depreciation. To value a machine at the end of the first year at the price at which it would sell if put up at auction would hardly seem fair to the year's business, and yet if the farmer could have purchased a machine equally good at public auction instead of buying the new machine, it would seem reasonable to mark the new machine down to the sale price, assuming that the farmer had paid the difference for the privilege of breaking in the new machine and that this should be charged to his annual expense.

One method of valuing machinery is to deduct a certain percentage of the first cost each year. This is a very abstract method of inventorying and does not get at the real truth of the situation. Each machine should be looked over carefully with a view to ascertaining the extent to which it had been worn or broken during the year so that any extraordinary depreciation may be taken into account. Notice should also be taken if

expensive repairs have been made during the year which may make the machine more valuable than it was at the beginning of the year.

Receipts and expenditures. While the inventory is an indispensable record, it alone will not tell the whole story. The farmer may have made money on the farm and spent it on his automobile or other personal accounts, so that his net worth is less at the end than at the beginning of the year. In order to know what he has made as a result of his farming operation it is necessary (in addition to the annual inventories) to keep a record of farm receipts and expenditures. This is not a difficult task if each evening when any expenditure has been made or any money received or any transaction made where payment is to be made in the future, a notation is made in any simple book, which may be kept for the purpose; the matters will be ready at the close of the year, or any previous time, for comparing the farm receipts with farm expenditures and the old inventory with the new; the farmer may know how much he has made farming during the year, for the increase in the inventory plus the increase of receipts over expenditures equals the farmer's income, which is the return he receives for his investments and his own labor and that of his family.

TARPLEYWICK FARM

Expenses and Receipts, March 1, 1915-March 1, 1916

	EXPENSES	RECEIPTS
Livestock	\$ 830	\$ 430
Livestock products	—	3872
Seeds and feeds	217	136
Labor	1932	—
Miscellaneous and taxes	430	114
Total	\$3409	\$4552
Balance	\$1143	

At first a balance of \$1143 may look very good, but after thinking the matter over the farmer says to himself: "I have made nothing, I could have sat on the fence and drawn 5 per cent on the average investment if I had invested in farm mortgages, and that would have amounted to \$1690. I have lost \$547 by

operating the farm, and I doubt whether the game is worth the candle."

But at this point his attention is called to the large increase in the number and value of the cattle on the farm, and the suggestion comes that after all he may have made some money farming. Before drawing any conclusions from the purchases and sales account the inventory should be taken and compared with that for the beginning of the year.

It will be noted that the inventory shows an increase of \$2145.47 which must be added to the \$1143 balance of receipts over expenditures. By combining these accounts we have a statement showing the gains resulting from the operation of the farm as follows :

Annual Statement, March 1

	1915	1916
Total farm property	\$32,735.42	\$34,880.89
Expense of operation	3,409.00	
Receipts of operation		4,552.00
Interest on investment, at 5 per cent	<u>1,690.41</u>	<u></u>
	\$37,834.83	\$39,432.89
Net return for farmer and family for operation	\$ 1,598.06	

This \$1598.06 represents what the farmer gained by farming, but does not show whether he has got ahead or fallen behind during the year. The farmer and his family may have spent more than they received, both as interest and profits, or they may have made a substantial saving.

To find how much he has got ahead the bills receivable and the bills payable must be taken into account along with the inventory. This may be shown as follows :

	1915		1916
Farm property, March 1, 1915	\$32,735.42	March 1, 1916	\$34,880.89
Bills receivable	<u>150.00</u>		<u>150.00</u>
Total Assets	\$32,885.42		\$35,030.89
Bills payable	<u>12,423.00</u>		<u>13,366.00</u>
Net Worth	\$20,462.42		\$21,664.89
Gain in Net Worth	\$ 1,202.47		

Thus, while the indebtedness increased, the property increased still more, so that after the family expenses were paid, which

amounted to \$406 more than the interest on the farmer's net worth, the proprietor of Tarpleywick Farm was \$1202.47 better off at the end than at the beginning of the year. This statement gives courage for another year and a copy of this summary statement put in the hands of the banker will give basis for a better line of credit.

Farm crop accounts. The farmer has many lines of production from which to choose. The problem of choosing the crops which will yield maximum results can be solved only by a careful study of the conditions which determine the character of farm organization. As a rule the farmer does not confine himself to one crop but combines a number of crops, for example, corn, oats, and hay into one system of crop rotation. The farmer's business problem, so far as crop selection is concerned, is that of selecting from each group of competing crops the one which will pay best and combining as many non-competing crops as can be made to add to the profits of the farm. One who has grown the various crops can usually classify them with reasonable accuracy into conflicting and non-conflicting groups. For example, in southern Wisconsin every farmer knows that corn, tobacco, sugar beets, and potatoes conflict with each other, but the question of which of these crops will pay the farmer best is usually not so clearly in mind. There are those who compare profits per acre and forget that one can plant and care for three or four times as many acres of one crop as of another.

The most accurate method of comparing profits is to keep cost accounts, which will show the amount of labor and other expenses laid out on each crop and the returns secured.

The accompanying summary of results of a cost account will help one in understanding the way in which cost accounts aid in the selection of crops.

This table shows the relative profitableness of the crops which have been tried on Tarpleywick Farm. In this case the oats paid better than the barley, although the income or gross returns per acre were nearly the same, the expense in preparing the barley land was greater; hence the profits were smaller.

SUMMARY OF CROPS ON TARPLEYWICK FARM

CROP	INCOME PER ACRE	EXPENDITURE PER ACRE	PROFIT PER ACRE	PROFIT PER DOLLAR OF EXPOT.
Barley	\$ 20.09	\$16.20	\$ 3.89	\$0.24
Oats	20.61	14.72	5.89	.40
Corn	43.29	23.40	19.89	.85
Tobacco	107.25	65.00	42.25	.65
Alfalfa	45.00	30.00	15.00	.50
Clover	28.71	17.71	11.00	.62

The comparison of the relative profitableness of corn and tobacco is not so simple. The tobacco showed a larger profit per acre but a smaller return per unit of expenditure than corn. The operating expense (aside from rent) being greater, one cannot operate so many acres of tobacco, — probably not over one third as many acres. For this reason profit per dollar of expenditure for labor and equipment seems to be a more practical basis for deciding which of two crops to grow than profits per acre, although profits per acre multiplied by the number of acres one can operate of each crop may in some cases be preferable to profit per unit of labor.

The fact that oats are less profitable than corn should not deter the farmer from growing oats if they are more profitable than any other crop which requires the farmer's energy at the same time of year. Even if oats are less profitable than corn, the corn profits plus the oats profits look much better to the farmer than the corn profit alone.

In order to arrive at all the facts essential to comparing profits the cost accountant keeps a record of the hours of human labor, horse labor, machine use, seed, fertilizer, twine, etc., put upon each acre of land in each crop. In case of doubt as to the relative profitableness of two competing crops, grow some of each until the figures show clearly which pays the better. There are various systems of keeping cost records, any one of which is good. The cost system should be confined to a few comparisons at a time, otherwise it becomes too much involved. If the com-

parison is between corn and tobacco, simply charge each of these crops for all it gets in the way of labor and supplies just as one keeps an account with a neighbor with whom labor is exchanged, from whom seed oats are borrowed, and to whom some calves were sold on account. Accounts of this kind are invaluable because they show which of two more or less profitable crops will add the greater amount to the total profits of the farm. It should be kept in mind that in agriculture the purpose of cost accounts is not to find out the specific cost of the different products but to ascertain the relative profitableness of the different types of farming and of the different competing elements in each type of farming. Not cost but relative profitableness is the basis of answering all the economic questions in farm management.

Livestock records and accounts. Every farm record should form the basis of answering an important question. On the dairy farm the production record is of first importance. Where the corn, the oats, and the hay grown on the farm are used in the dairy and marketed in the form of milk it is a matter of some consequence to know what each cow in the herd is paying for her feed. This requires feed records, milk records, and labor records.

Feed records may be kept in a simple manner. For example, the farmer has decided that a twelve hundred pound cow should be fed thirty-five pounds of ensilage per day, twelve pounds of hay per day, and a pound of ground oats (or some other grain equivalent) for every four pounds of milk produced. In order to feed intelligently the herdsman must have definite figures in mind for each cow as he passes down the alley with his feed cart. If the cow is cleaning up what she is receiving these figures will not usually be changed oftener than every two weeks and then the change is in the grain only. It is a simple matter, therefore, to list the cows and the amounts fed each on the first of the month and make no further entries until a change is made in the ration of one of the cows, which is then entered with the date. This gives a satisfactory record of what each cow has consumed.

The right way to keep a milk record is to weigh the product each milking and have the milk tested for fat once a month. It takes about five seconds to weigh and record the weight of the milk where the record sheet and the milk scales are conveniently located. Weighing the product each milking is worth while in itself as it is a means of knowing at once if for any reason the herd or any particular cow in the herd is not doing well. This record is also the basis for adjusting the grain ration from time to time. The fat test can be made by the farmer but the more practical way is for the farmer to have the samples tested at the creamery.

Labor records show the amount of time spent in the operation of the dairy. In addition to keeping general labor records which will show the time spent on the dairy herd as a whole, it is desirable to take account once a month of the differences in the amount of time required by the different cows. For example, Mary and Molly give essentially the same amount of product, but Molly is easily milked in five minutes whereas ten minutes are required to milk Mary. The number of cows one man can handle depends largely upon the ease with which they can be milked.

The first object of dairy accounts is to know whether or not it pays better to operate the dairy than to sell the crops which are fed to the cattle. In answer to this question the records should give basis for an annual statement as follows:

ACCOUNT WITH HERD OF TEN COWS FOR YEAR ENDING MARCH 1, 1915

Expenses

Twenty tons of hay, farm value	\$ 240
Eight hundred bushels oats, farm value	480
Sixty tons of corn ensilage, farm value	240
Labor, 1400 hours	280
Interest on value of herd	60
Depreciation on herd	70
Interest on dairy barn and equipment	48
Depreciation on dairy barn and equipment	40
Salt	7
Veterinary	22
Total cost	<u>\$1487</u>

<i>Receipts</i>	
80,000 pounds of milk	\$1300
Five veal calves	47
Four heifer calves	60
One calfskin	1
Eighty tons of manure	80
Total	<u>\$1488</u>

Upon balancing his account the farmer often finds as here illustrated that he is just about "breaking even." The dairy is furnishing a market for his crops and his labor. If it were not for the dairy, much time which is put on the cows would not find profitable employment. The dairy provides employment the year round with emphasis on the winter months, while the growing of hay, oats, and corn give summer employment mainly. Furthermore, the farmer may find that, while he can produce good ensilage, the corn is caught by the frost three years out of five and that the attempt to produce merchantable corn is a precarious undertaking.

Everything considered the farmer decides that in spite of the showing on the balance sheet he can do no better than to continue to produce milk. But if he is thoughtful he will ask himself the question, How can I increase my production of milk without a proportional increase in cost? By looking over the herd record he finds that his best cow, Bedelia, gave 13,500 pounds of milk testing 3.8 per cent butterfat, whereas the poorest cow, Lily, gave only 4860 pounds of milk testing 4.2 per cent. The milk from Bedelia was worth \$1.675 per hundred or \$226.125; that from Lily was worth \$1.725 per hundred or \$83.835. The total charge against Bedelia was \$168.70 and that against Lily was \$131.20. The profit on Bedelia was \$57.42, while the loss on Lily was \$47.37. A further study showed the farmer that if he could dispose of the poorest five cows in the herd and replace them with cows as good as the average of the other five, his net profits on the herd would be \$260. The leading purpose of milk and feed records is to eliminate the "boarders" and fill the barn with high producers.

The cost-accounting method is suited especially to testing the competing elements in a given type of farming. The general

financial account including receipts, expenditures, and inventories shows the profits of a given type of farming under a given manager. For example, if in one region where the conditions are the same it is found that the farmers who are selling cream and some dairy cows, and hogs about equal in value to the total dairy receipts, are through a series of years making more money than those who buy cows, sell whole milk from a larger herd but keep no hogs, it would seem to indicate that the former were the more profitable type of farming. It rarely happens that all the farmers of a district keep accounts which give basis for such a comparison. In the absence of financial accounts the "Farm Survey" is a very useful method of finding a basis for making up a statement of the profits derived from operating a farm.

The farm survey is an attempt to get the farmer to call to mind what he had on hand in the way of farm property of all kinds at the beginning of the year, the receipts and expenses during the year and the property on hand at the close of the year, in order that an annual statement may be made showing the profits of operation. While these surveys lack much of complete accuracy, they give basis for making comparisons which give important suggestions regarding the relative profitableness of types of farming. The farm survey has been most useful in stimulating bookkeeping on the part of farmers. It is a method of permanent value, improving with the increase in bookkeeping by farmers. Its future use probably lies in the field of statistics rather than in the field of accounting.

The historical method. Much is gained by studying the operations of economic forces through a period of time. Economic forces are not easily measured, and they are so numerous, of such varying strength, and so often operate in opposite directions that at any given moment it is difficult to make an estimate of the future resultant of these forces, unless the changes wrought by them in the past can be resorted to as a basis of judgment.

The federal census for 1900 showed that more than a third of the farmers of the United States were tenants and about a third

of the farms operated by owners were mortgaged. Without resorting to the historical method it would have been impossible to know whether the forces making for tenancy were overbalancing the forces making for ownership, or vice versa. It might be inferred by one viewing these facts without this historical setting that ownership had once been universal and that the owners had lost money, mortgaged their farms, lost their titles to the land, and become tenant farmers. On the other hand, one might infer that farmers were using tenancy and the mortgage as means of making transition from landless laborers to the free ownership of land. This illustration is to the point because inferences were drawn in 1880 when statistics of land tenure were collected for the first time.

At the present time, with the changes of thirty years recorded at ten-year intervals, it is possible to demonstrate clearly the trend of affairs during that period, and to describe many of the forces which have been operating. The available materials show that young men do very generally rise through the successive stages of tenant farmers and mortgaged owners to the free ownership of farms, but the data show also that there has been a retardation in this movement and that longer time is required to make this movement recently than in earlier years. The census data for 1890 and for 1900 show that older farmers are generally owners, while tenancy is most common among young farmers. By comparing the data for the two periods, it becomes clear that some force is retarding the movement from tenancy to ownership, for a smaller percentage of those of the various ages were owners, and a larger percentage were tenants in 1900 than in 1890. This is illustrated in Figure 17. Illinois is used for this illustration because tenancy is more common in that state than in any other part of the North. The illustration shows that the percentage of owners among young farmers is very small, but that ownership increases with the age of a farmer and that, of the farmers fifty-five years of age and over, about 85 per cent are owners. By comparing the situation in 1890 and 1900 for each age group, it becomes clear that while there is a movement toward land ownership, as the farmers

grow older, it is true, however, that a smaller proportion of the farmers of each age group were owners in 1900 than in 1890, showing retardation in the movement from tenancy to free ownership. The right hand illustration in Figure 17 shows the reverse situation with regard to tenancy, that tenancy is most common in the younger age groups and gradually declines. A careful study of the facts now available shows that many forces are in operation, some making for dependent tenants others for independent landowning farmers.

Another example of the historical study of economic forces is afforded by the sheep industry in the United States. Between 1840 and 1850 there was a decline in the number of sheep kept in parts of Vermont and in the eastern part of New York, but the marked change was in Ohio and Michigan, where there was a great increase. The tendencies were the same in Vermont, New York, Ohio, and Michigan, between 1850 and 1860, with an important beginning of the sheep industry in Texas, California, and Oregon.

The decade from 1860 to 1870 brought a reaction in north-eastern Ohio and the beginnings of the concentration of the sheep industry of Texas in the dry lands of the South. Both of these movements continued during the next decade. By 1880, Vermont had almost ceased to be a sheep state, and the sheep of New York were but a handful in comparison to the number in 1840, but the beginnings of the new industry in the Rocky Mountain states were already important in Colorado, Wyoming, and Montana. During the next two decades the development of the sheep industry in the mountain states continued, but between 1890 and 1900 a marked decline is shown in California, Texas, Wisconsin, Michigan, and Ohio.

When the maps for 1840 and 1910 are compared, it becomes evident that during the seventy years the sheep industry made a complete shift with the exception of a few counties in Pennsylvania and Ohio, so far as the concentrated centers of production are concerned. By reading the agricultural papers of this period one finds many references to these changes. A well-known Merino breeder of Vermont in one decade is heard from in the

next decade from California where he is in the same business. The method of driving sheep from Ohio to Texas is described and in fact the student who has the time and ability can easily reconstruct the whole movement of the sheep industry, from the days when Vermont and New York led in this industry to the present day with the Rocky Mountain states in the dominant position.

The story is only half told, however, until it is explained. To explain these changes it becomes necessary to write the history of the expansion of American agriculture. The competition of the various farm enterprises has played an important part. The result of this competition is determined by geographic factors. Topography, climate, and nearness to the market are important examples.

In Vermont, New York, northeastern Ohio, and in Wisconsin, wool growing was driven out by the dairy industry. This is indicated by contemporaneous literature. Statistics of the dairy industry were not collected in 1840, but the milk production statistics as shown by the census for 1910 indicate the presence of this industry at the latter date in the regions which were in the earlier decades important centers of the sheep industry. The economic principle involved is simple. Wool is durable, dairy products are perishable. The value of wool per pound is much greater than milk and has often been greater than butter and cheese. The dairyman at a distance from the market for dairy products cannot compete with the one near the market so well as the shepherd in the distant hills and downs can compete with the wool grower near the center of population.

Beef cattle replaced sheep in Texas, the development of agriculture and fruit growing by irrigation was an important factor in California, and tariff legislation played an important part in forcing out the sheep in Ohio and Michigan during the nineties. A careful study of the operation of competitive forces, with and without artificial price levels, enables the student to discover the workings of the economic laws which have wrought the changes.

The geographical method. Farming in the various regions of the United States shows a high degree of diversity. In one region

corn, oats, hay, pasture, dairy cows, and hogs, constitute the principal enterprises combined upon the individual farm. In another region the combination is the same with the exception that more emphasis is given to corn and hogs, and beef cattle replace the dairy cows. In other regions the livestock is unimportant and special crops as wheat, cotton, or cane, stand out as the dominant enterprise, while in still other regions, the grazing of cattle or sheep becomes the principal enterprise.

These variations in farm organization are due to differences in soil, climate, labor supply, market relations, etc. The explanation of differences in types of farming, so far as they are due to differences in environment, is the purpose of the geographical method.

The geographical method may be illustrated by comparing the distribution of spring wheat, barley, and oats. These crops are usually counted competing crops. They occupy the same place in the system of crop rotation and they would require the attention of the farmer about the same time of year in any given region. A study of their distribution shows a remarkably distinct division of territory between these crops. In Minnesota, for example, wheat growing extends east to a line drawn north and south through Northfield. East of this line barley is the dominant spring grain crop. In Wisconsin, barley production is concentrated in the east central counties noted for their high-grade barley for brewing purposes.

The centers where oat production is concentrated are found farther south. Central Illinois and north-central Iowa stand out as regions where oat production holds a highly important place on the farm.

That climate is one factor in determining this division of territory is obvious from the nature of the division. These crops differ in their demands for moisture as well as in their requirements with regard to temperature. Soil differences are said to play an important part in this division of territory. The relation of the barley regions to barley markets is in itself suggestive of another geographic factor which should be considered.

This study might be carried further by the use of charts of

the various other enterprises which are complementary or supplementary to the group of competing crops. Such maps would show the spring wheat region to be a flax region and the oat regions to be corn regions, etc. This method followed out completely with maps of livestock, as well as crops, would show the type of farming in any agricultural region.

The maps showing the type of farming should be accompanied with maps showing the topography, the soil, the length of the growing season, the temperature during the growing season, the rainfall, the market, the agricultural population, the manufacturing population, the mining population, etc., all of which help to explain the types of farming in terms of geographical differences.

The statistical method. The statistical method stands for quantitative study. Much of our knowledge of economic forces corresponds to qualitative analysis in chemistry. The force is noted but not measured. The statistical and accounting methods look to the measurement of forces, thus putting the work on a quantitative basis. In the treatment of every subject and in the use of all other methods, all data which lend themselves to counts or measurements should be treated statistically.

There are specialists who devote themselves to the collection and the tabulation of statistics. Their finished product is raw material for the agricultural economist.

Sources of statistical data. There is no one greater source of material for the student of agricultural economics than the reports of the federal census. They contain the only comprehensive source of material from which it is possible to ascertain the type of farming in every section of the United States. This gives the basis for the study of comparative agriculture, which is one of the best methods of gaining knowledge of the economic forces which determine the actions of farmers.

Not only the type of farming, but also the economic status of the farmer is shown by the census for every county in the United States. Both the white and the colored farmers are divided into seven classes, based upon the relation they sustain to the land they cultivate.

The census reports give the data on which to base historical studies of the changes which are taking place in the type of farming and in the status of the farmer, as well as a basis for comparative study at a given time.

The first agricultural census was taken in 1840. This first census of agriculture was a crop and livestock census. In 1850, general farm data were added and other improvements have been added each decade since.

In 1880, tenure statistics were added. Thus the basis for studying changes in the type of farming extends over a period of seventy years and the data for studying changes in the status of the farmer are available for thirty years.

Too little use has been made of these valuable materials in the past. Two methods which the writer has found useful in the utilization of these statistics may be mentioned :

The system of mapping already illustrated providing a chart with close gradation of variation in density for each fact presented in the census, puts the materials in form for ready comparisons both historical and geographical. Not only does the series of maps show the changes in the localization of each line of production through a series of years, and show how the territory is divided between the various lines of production at a given time, but indicates also the way in which the different lines of production are combined in a given district, thus showing the type of farming in each district.

The tabular method can also be used to advantage in comparing types of farming. A table indicating the proportion of the improved land in farms devoted to each crop shows the utilization of the land. The character of the crops, and the relation between the numbers of livestock kept and the amount of feedable products produced gives a clue to the way in which the products are utilized, whether sold in their original form as a product of the field, or used as a basis of the livestock industry. While a series of maps based upon quantities of product can be made to cover the seventy years, maps showing crop acreage, which is a better basis for determining the utilization of the land, cannot be made for the decennials prior to 1880.

In making use of the census materials, the original statistics by counties are of first importance. The descriptive material which describes the quality of the statistics is next in importance. The text which is intended to supplement the statistics, while useful, is of less permanent importance than the detailed statistics.

State census reports, the annual reports, and more recently, the Year Books of the United States Department of Agriculture, and the state agricultural reports contain valuable statistics. Market reports in trade papers and in reports of boards of trade, etc., provide statistics of use in the study of prices. While these various sources are not all that may be desired, the student will find that anything he can do for himself in the collection and tabulation of statistics will be but a drop in the bucket in comparison with the data available in these sources which have been prepared by the statistician. Since he is so dependent upon these sources of material, it is important that the agricultural economist be in close touch with the agricultural statistician who is preparing these source books.

The use of market statistics may be illustrated by a study of the relation of the price of corn to the supply and price of hogs. The causes of the high prices of hogs on the Chicago market in 1910 can best be understood by studying the history of the hog and corn industries as shown by the market statistics. When the statistics of prices are studied it is an undeniable fact that hog prices were higher in 1910 than they had been at any other time for a long series of years, as shown in Figure 23.

The general theory being accepted that this rise in price must be due to some change in the conditions of supply or the conditions of demand, the student should proceed to study the conditions of supply and demand. By charting the supply of hogs on the Chicago market month by month, the fact becomes clear that during the years 1909 and 1910 the supply of hogs was unusually short. The price of hogs was unusually high during the same period. Little time is required to make the inference. But what was the cause of the shortage of hogs? One may proceed to formulate hypotheses which may be put into the form

of questions. Has some pestilence ravaged the hog lots of the country? Has there been a failure of the crops which are used as hog feed? Corn being the principal hog feed, we may ask, has the demand for corn for other purposes been unusually

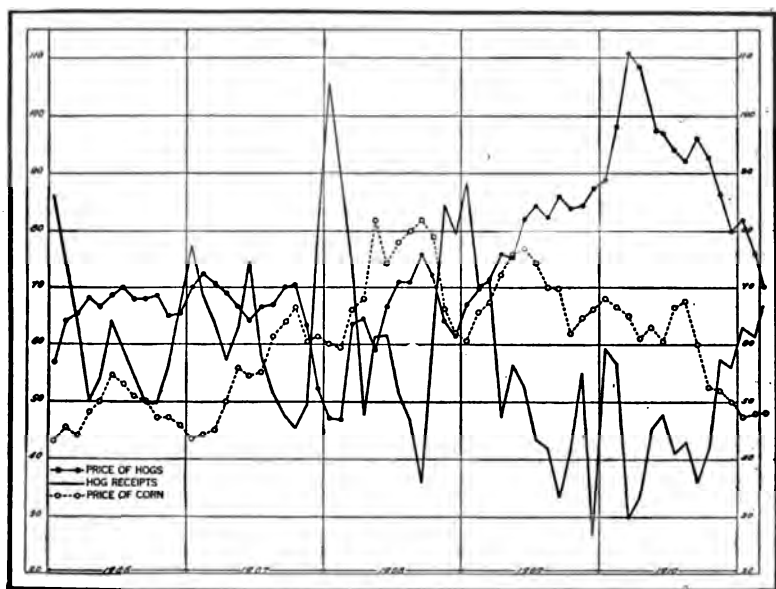


FIGURE 23.—Relation of the price and supply of hogs to the price of corn at Chicago.

The price curves are so drawn that when one bushel of corn produces 10 pounds of pork, the amount which the hog price curve rises above the corn price curve represents the net returns from the extra labor of breeding and feeding. In 1906 and 1907 there was a large profit in feeding corn to hogs, while in 1908 there was a loss. The figures on the margin represent the monthly high price of corn in cents per bushel; the monthly high price of hogs in tenths of cents per pound and the monthly receipts of hogs in tens of thousands.

great? These conjectures as to the cause of the scarcity of hogs leads to the charting of the Chicago price of corn.

During the years 1906 and 1907 the price of hogs was very high in proportion to the price of corn. The supply of hogs was relatively short during the early part of the period, but by the beginning of 1908 the supply of hogs on the Chicago market

reached an unusually high mark. During the year 1908 the corn price curve held steadily and appreciably above the hog price curve. On the assumption that a bushel of corn is required to produce ten pounds of pork, this meant a loss on the corn as well as on the time employed in feeding; ten to one is the price relation in the chart. The distance which the curve showing hog prices rises above the curve showing corn prices shows the return for labor in feeding. In 1908 this was a minus quantity. This condition had not existed during the prior fifteen years. Early in 1909 the curves were close together, but the corn price was downward, while the hog price was unusually high. Early in 1910 hog prices started down.

So soon as the situation as to the price of corn and hogs and the supply of hogs after 1907 is impressed upon the mind, it is hard to keep from making the inference that because hogs were fed at a loss in 1908 many farmers ceased to breed hogs in the usual numbers. The facts indicate that whether it was lack of breeding or some other cause the supply of hogs in the country was short, for so high a price for so many months would certainly stimulate shipments if marketable hogs were to be found.

The next fact requiring explanation is the high price of corn in 1908. A glance at the curves shows that during the greater part of the year the hog price was quite normal, but the corn price was abnormally high.

The receipts of corn on the Chicago market in 1908 were 34,000,000 bushels below that of the previous year, and the lowest they had been since 1895, with the exception of the years 1901 and 1902 when the receipts were low and the price high owing to the short corn crop of 1901. But why this shortage in receipts of corn on the Chicago market in 1908?

The corn crop of 1907 was less than it had been for the two preceding years, but with the exception of 1905 and 1906 the crop of 1907 was the largest reported. The shortage of the corn crop of 1907 under that of 1906 was only 11.5 per cent, but the receipts of hogs at Chicago during the period when the bulk of the hogs which had been fed 1907 corn were marketed, indicate that out of this relatively small corn crop of 1907 an

unusually large number of hogs were fed, leaving a relatively short supply for the market. Before drawing conclusions, however, other factors need be carefully investigated to make sure that other important forces were not operating simultaneously. These facts are presented in this form in order to illustrate this

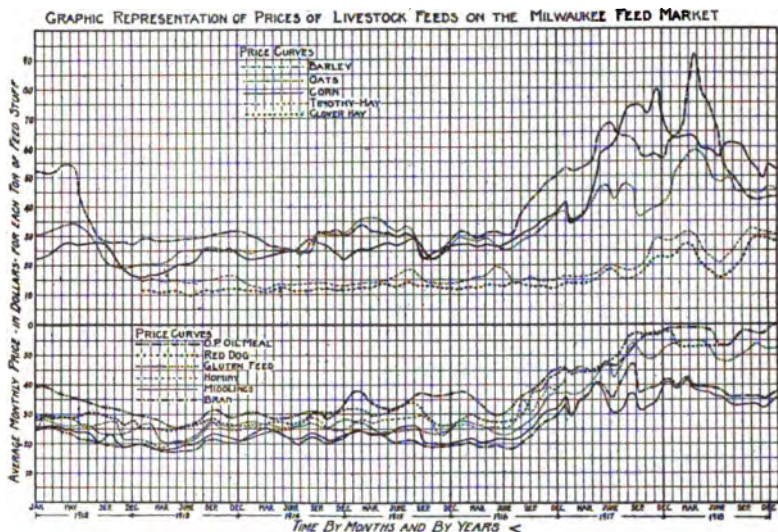


FIGURE 24.— In the winter of 1916 and 1917 many dairy farmers were impressed with the idea that it would pay well to buy feed in the summer and store it for use in the winter. A study of this chart should make one better able to judge whether the conditions of the feed market in 1916 and 1917 were normal or exceptional. This is given to illustrate the way in which statistical study may be used in giving a broader basis for passing judgment on a question of this kind.

well-known method of putting statistical data in such form that their relations are easily comprehended.

The experimental method. The experimental method may be used to throw light upon many problems in agricultural economics. For example, in order to carry on investigations in intensity of culture, this method must be employed. Some of the data essential to the analysis of the economic problems of the farm can be secured by keeping records upon farms under the management of intelligent farmers with whom it is possible to

coöperate. By this method, the problem of combining complementary enterprises in such a manner as will keep the labor and equipment employed as nearly continuously as possible and in the lines of production which will prove most profitable, can be worked out in a manner fairly satisfactory. Furthermore, the contact with the farm under conditions of normal commercial agriculture gives validity to the results secured and gives the opportunity for developing a system of records which may ultimately be used by an intelligent farmer in determining what to produce.

When one turns from the question of *what* to produce to the question of *how* it should be produced, the problem becomes one which requires controlled experiments. The major economic problem relating to the question of how to produce the articles decided upon, centers in the question of the proportions in which the factors of production shall be utilized, the best-known phase of which is the problem of intensity of culture. This is a question regarding which agriculturists, economists, and farmers have theorized for centuries, but regarding which no adequate experiments have been carried out. In the theoretical analysis of this problem, the point has been reached where experiments are essential to further progress.

The proper degree of intensity of culture must be determined for each farm, and the result will change with variation in the wages of labor, the cost of equipment, and the price of land. The first step toward progress in this line is the discovery of a method of experimentation which can be applied upon any farm without state aid and without endangering the profits of the farmer.

Experiments with a series of plots with varying treatment are valuable for ascertaining physical and biological truths, but it is doubtful if they are of use in the field of economics for the simple reason that while the laws of economics which determine the proper degree of intensity of culture are of general application, the conditions are so variable that the proper degree of intensity on one farm is not necessarily the proper degree on another. Plot experiments on the intensity of culture would

have no practical value therefore except for the farm on which they were made. Plot experiments are too expensive for the practical farmer, hence some other method must be contrived. It is highly desirable that a method of ascertaining the proper degree of intensity of culture be discovered and taught, but any attempt at teaching more than the principles involved and the methods of their application is folly, for what is right for one member of a class of one hundred students, or one out of an audience of farmers, may be the wrong thing for many of the others.

Differences in the soil, in the value of the land, in the efficiency of the farmers, and in facilities for marketing make differing degrees of intensity of culture necessary. Any method of ascertaining the most profitable degree of intensity on any farm, to be of general use, must be so planned that its application will not endanger the profits of the farm. Some process of gradual adjustments suggests itself as most likely to succeed.

The foregoing discussion is not intended as a complete survey of methods applicable to the study of economic problems in agriculture. The aim has been simply to describe the methods in common use at the present time. No one method is favored above another. All are needed in securing an intensive and a comprehensive view of the economic forces which affect the farmer.

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